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**F100(3) PARALLEL COMPRESSOR
COMPUTER CODE AND USER'S MANUAL
FINAL REPORT**

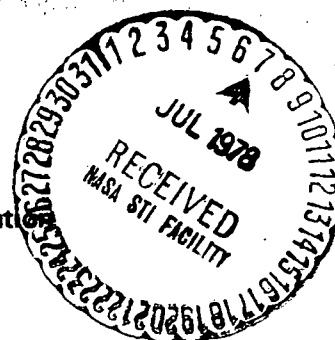
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16. Abstract The Pratt & Whitney Aircraft multiple segment parallel compressor model has been modified to include the influence of variable compressor vane geometry on the sensitivity to circumferential flow distortion. Further, performance characteristics of the F100 (3) compression system have been incorporated into the model on a blade row basis. In this modified form, the distortion's circumferential location is referenced relative to the variable vane controlling sensors of the F100 (3) engine so that the proper solution can be obtained regardless of distortion orientation. This feature is particularly important for the analysis of inlet temperature distortion. Compatibility with fixed geometry compressor applications has been maintained in the model.					
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FOREWORD

This report was prepared for the National Aeronautics and Space Administration, Lewis Research Center, under Contract NAS3-20610. The report documents the modifications of the P&WA multiple segment parallel compressor model required to analyze compression systems with variable vane geometry such as the F100 (3) turbofan engine. Mr. P.G. Batterton was the NASA Project Manager for this effort, assisted by Dr. A. Kurkov, and Mr. R. S. Mazzawy was the P&WA Program Manager. This report was prepared by R. S. Mazzawy, D. A. Fulkerson, D. E. Haddad and T. A. Clark with assistance from other P&WA contributors.

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SUMMARY

This report documents the modifications to the Pratt & Whitney Aircraft Multiple Segment Parallel Compressor Model which are required for variable vane geometry compressors. These modifications allow for the inclusion of vane angle as well as corrected rotor speed in determining compressor blade row performance. The variable vane control sensor location is also taken into account for positioning the vanes under distorted inlet conditions. This feature provides the appropriate vane position regardless of the distortion type (pressure and/or temperature) and orientation.

The F100 (3) turbofan engine has been modeled to verify the aforementioned modifications. This engine has a variable inlet guide vane in the fan and high pressure compressor. Two stator vanes in the high pressure compressor are also variable. The variable vane schedules used are compatible with NASA LeRC engine XD11. Model predictions for both inlet temperature and inlet pressure distortion test cases agree favorably with experimental component data and engine stability audit calibrations, respectively. In particular, the model predicted that a 180° inlet total pressure distortion amplitude of 0.45, $(P_{t \max} - P_{t \min})/P_{t \text{ avg}}$, was required to stall the F100 (3) engine at approximately 80% of design corrected low rotor speed. A value of 0.43 was anticipated on the basis of engine experience.

The details of the distorted flow field have been calculated for the F100 (3) engine with the 180° inlet total pressure distortion. The documented results include individual blade row incidence and loading levels as well as the distortion transfer and attenuation characteristics of this engine. No detailed engine measurements were available to verify the model predictions.

INTRODUCTION

NASA Lewis Research Center (NASA LERC) and Pratt & Whitney Aircraft have collaborated in the application of a P&WA circumferential distortion model to full-scale turbofan engines. Extensive work has previously been accomplished under a previous contract (NAS3-18535) dealing with the TF30-P-3 engine. Results of that work are detailed in References 1 and 2. Under that contract, the TF30-P-3 engine had fixed compressor geometry. With the evolution of advanced turbofan engines, it has been necessary to modify the distortion model to include a variable vane geometry capability. In the work reported herein the distortion model is applied to the F100(3) turbofan engine which has such variable geometry.

One aspect of variable geometry is the dependence of compressor performance on vane angle as well as corrected rotor speed. Consequently, the blade row performance characteristics for the F100(3) fan and high pressure compressor reflect this dependence. In addition, under conditions of distorted inflow, there may be a circumferential non-uniformity of total temperature at the axial plane of vane-controlling temperature sensors. This requires the model to relate the inlet distortion orientation to a fixed point on the engine. Consequently, the first segment is located at top dead center (0°) and each succeeding segment proceeds in the direction of rotor rotation. Specifying the location of the vane-controlling sensor(s) allows the correct total temperature to be used to set the variable vane positions within the model.

The validity of the program modifications was checked by comparing predicted results with a limited amount of 180° inlet temperature distortion data from a F100(3) high pressure compressor rig. Good agreement was obtained with the data, indicating that the model adequately accounted for the variable vane geometry effects. Additional testing of the model was done using the complete compression system for a 180° inlet total pressure distortion. The distorted compressor performance for this example case is documented for the level of distortion predicted to induce stall on the nominal operating line.

The work herein was done using the U.S. Customary system of Units. The information in this report is provided in those units as well as the International System of Units (SI).

P&WA MULTIPLE SEGMENT MODEL

Simple parallel compressor theory usually considers the circumference of the compressor to be divided into two flow regions: one of relatively low velocity such as would exist behind a distortion inducing screen and one of relatively high velocity. The multiple segment parallel compressor model expands upon simple parallel compressor theory by using a large number of parallel segments to provide a more detailed definition of the circumferential flow field. In addition, this model accounts for two-dimensional and unsteady flow effects which are not considered in the basic theory. A complete description of the model is contained in Reference 3.

While this model has proven to be both useful and versatile in the analysis of non-uniform flow problems (e.g., References 2, 4), it has been limited in its application to fixed-geometry compressors. The increased use of modern turbofan engines with variable vane geometry requires that a better understanding of this additional dimension be acquired under conditions of inlet distortion. Consequently, the multiple segment model has been modified, and variable vane effects were investigated using the F100(3) turbofan engine as the basis for the model.

Variable Geometry Modifications

The multiple segment model makes use of individual blade row characteristics to describe the quasi-steady uniform flow performance of a compressor. These characteristics (static pressure rise and total temperature rise vs. mass flow parameter) are shown schematically in Figures 1 and 2 for a fixed geometry machine. As noted in the figures, the blade row characteristics are for a single value of compressor corrected rotor speed. However, the variation with rotor speed is generally of second order because the pressure rise, temperature rise and mass flow parameters are scaled with corrected rotor speed. This can be seen by the following definitions:

$$\begin{array}{lll} \text{Pressure Rise Across} & \psi & = \frac{\Delta P_S}{P_S} \frac{(N/\sqrt{\theta})^2_{Des}}{(N/\sqrt{\theta})^2} \\ \text{Blade Row} & & \\ \\ \text{Temperature Rise Across} & \lambda & = \frac{\Delta T_T}{T_T} \frac{(N/\sqrt{\theta})^2_{Des}}{(N/\sqrt{\theta})^2} \\ \text{Blade Row} & & \\ \\ \text{Mass Flow} & \phi & = \frac{W\sqrt{\theta}}{\delta A} \frac{(N/\sqrt{\theta})_{Des}}{(N/\sqrt{\theta})} \end{array}$$

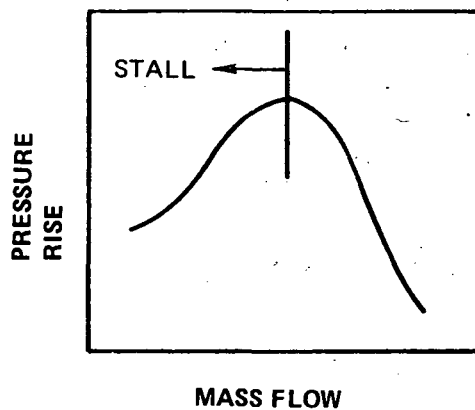
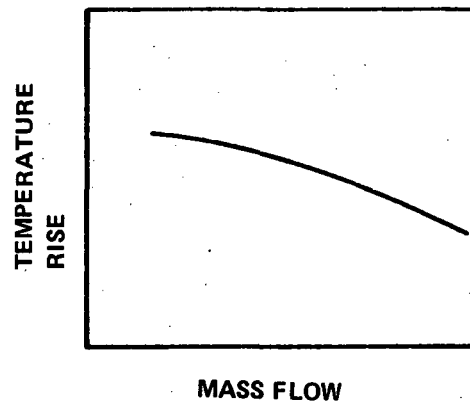


Figure 1
Typical Pressure Rise at Constant Rotational Speed

Figure 2
Typical Temperature Rise at Constant Rotational Speed



When similar performance characteristics are produced for a variable geometry compressor, however, the variation with corrected rotor speed becomes much more pronounced as is evidenced in Figures 3 and 4. The reason for this is the wide variation in vane angle that accompanies the rotor speed change. Within the context of the multiple segment model, several problems had to be resolved because of the variable geometry:

- 1) Axial lengths and vane stagger angles are both important for determining the swirl of a flow distortion pattern and a fluid particle as they progress through the machine from inlet to exit. The model must account for these effects when the vane geometry is variable.
- 2) The application of performance characteristics to the calculation of a circumferentially nonuniform flow field generally involves a circumferential variation in local corrected rotor speed. The vane angle, must of course, be circumferentially uniform, resulting in a mismatch of these two controlling variables for the different circumferential segments used in the model calculation. A system was required which provided the correct performance regardless of the combination of local rotor speed and angle. The problem is further compounded by the desirability of maintaining the model's compatibility with fixed geometry compressors.
- 3) Interpolation of performance characteristics between lines of constant rotor speed must be done in a manner which reflects the vane angle differences. The standard procedure for interpolating at constant mass flow was no longer adequate because of the large variation in mass flow range covered by different constant speed lines. Again, compatibility with fixed geometry compressors was desirable.

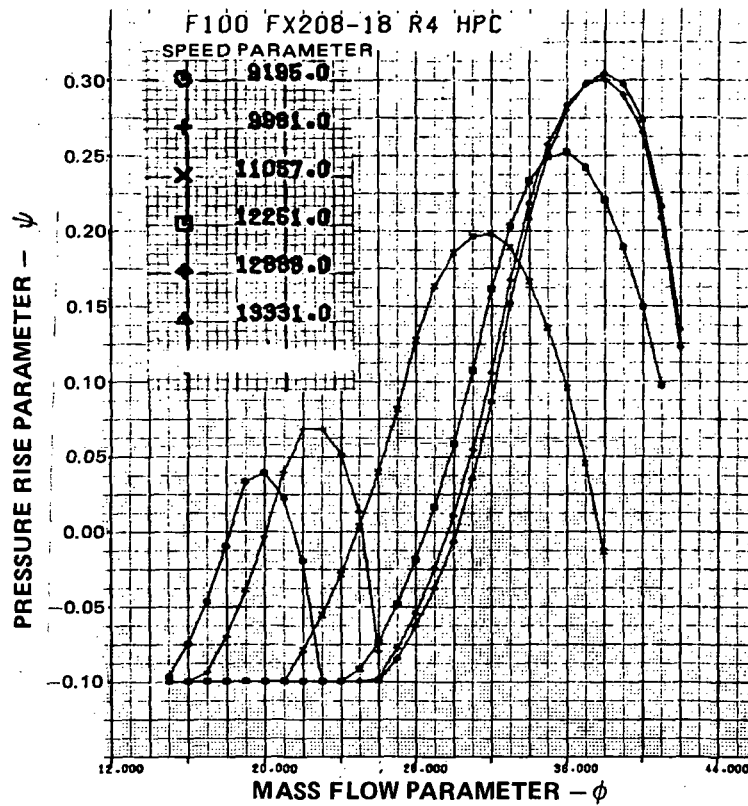


Figure 3 Typical Pressure Rise Characteristics For Variable Geometry Compressor

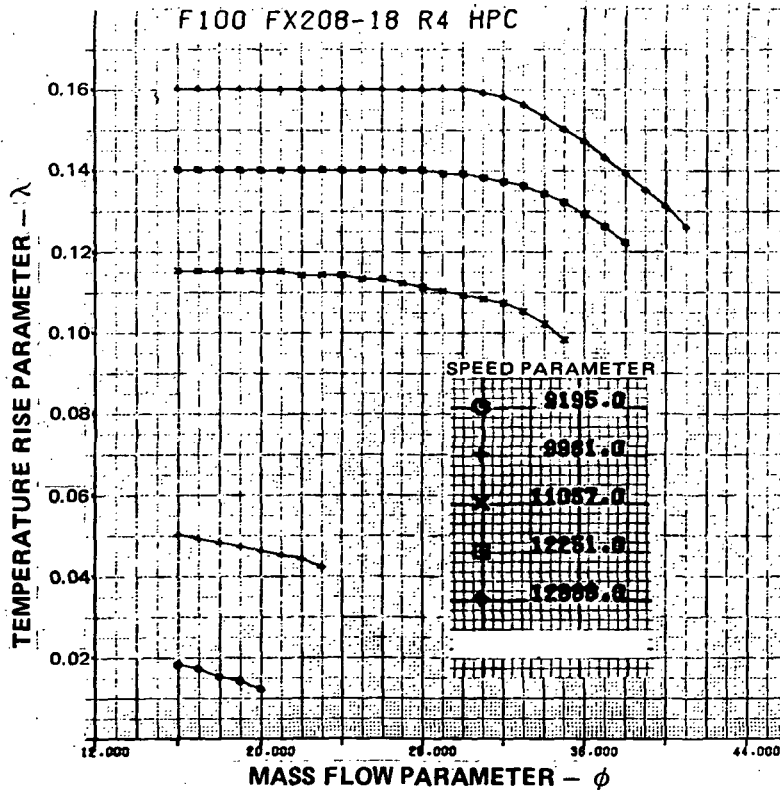


Figure 4 Typical Temperature Rise Characteristic For Variable Geometry Compressor

Procedures have been successfully established within the P&WA computer model to satisfy all of these requirements. These procedures are discussed in some detail in the following sections.

Axial Length Variation

This problem is handled by the straightforward application of trigonometric principles. For each variable vane and the upstream and downstream gaps, dimensions and flow angles are adjusted on the basis of the sensed corrected rotor speed and the resultant vane position. This assures that the swirl of the distortion patterns and flow velocity triangles are accurately calculated by the model.

Non-Uniform Flow Conditions

When using the model to evaluate performance of a variable geometry compressor, a problem arises due to the circumferential non-uniformity of total temperature under distorted inlet conditions. The blade row characteristic for each circumferential segment is evaluated on the basis of the local (axially and circumferentially) corrected rotor speed. Stator vane angles, however, are determined by a temperature sensor(s) located at some other axial/circumferential location. Consequently, the blade row characteristics must reflect vane angle as well as corrected rotor speed.

Since it was desirable to maintain compatibility with the established fixed geometry calculations and "curve reading" procedures, the solution to the problem took the following form: The compressor characteristics must still be presented in terms of ψ and λ vs ϕ for various levels of corrected speed. The corrected speed used to interpolate the characteristics, however, must represent both a corrected speed and vane angle. Looking at Figure 5, rig data representing the ratio of local corrected speed (i.e., the corrected speed based on stage inlet conditions) to the compressor inlet corrected speed are plotted as a function of IGV metal angle for the normal operating range of the F100 (3) compressor. If a line was to connect the values plotted for each stage it is easily observed that the slope of these lines would be nearly constant.

A second observation is that the ratio of local to inlet corrected speed for a fixed geometry machine is approximately constant over a reasonable speed range. For example, a stage in the middle of the F100 (3) high pressure compressor would have a temperature which is about 1.5 times the inlet temperature at high power. This converts to a local to inlet corrected speed of about 0.81. If a 10% variation in inlet corrected speed occurs (corresponding to a 20% inlet temperature distortion), the temperature ratio variation at the middle stage would range from 1.45 to 1.55 since temperature rise is proportional to the square of corrected rotor speed. The corresponding ratio of local to inlet corrected speed only varies from about 0.80 to 0.83 which is relatively small for a sizable inlet temperature distortion. This variation would be slightly larger in rear stages and smaller in front stages because of the magnitude of the temperature rise from the inlet.

The conclusion to be drawn from the above observations is that for temperature distortions at a given stage, the ratio of local to inlet corrected speed is primarily affected by changes in inlet guide vane angle. Therefore, a first order approximation to correct for small independent variations of inlet guide vane angle from the nominal inlet corrected speed-inlet guide vane angle relationship is possible in the following manner. First a solid line is drawn with a representative slope through the average of available compressor points shown in Figure 5. Even though the slope of the local to inlet corrected speed ratio with inlet guide vane angle for each stage varies by a small amount from the slope of the solid line, it is felt that this variation would not introduce a significant error to the model calculations. Next, a speed parameter is calculated using the relationship established by the solid line.

$$\text{Speed Parameter} = (N_2/\sqrt{\theta_{\text{local}}}) \left/ \frac{N_2/\sqrt{\theta_{\text{local}}}}{N_2/\sqrt{\theta_{2.5}}} \right] \text{ From Figure 5.}$$

This "speed parameter" is then used in the interpolation of the compressor characteristics. Note that since only the single solid line of Figure 5 is used to obtain the "speed parameters" for all the compressor stages, the model characteristic curves must now have their equivalent "speed parameters" assigned to them rather than the normal corrected speed values. A typical set of values is shown for stator 6 in Table I.

TABLE I
STATOR 6

$N_2/\sqrt{\theta_{2.5}}$	Actual $N_2/\sqrt{\theta_{\text{Local}}}$	α IGV	$\frac{N_2/\sqrt{\theta_{\text{Local}}}}{N_2/\sqrt{\theta_{2.5}}}$	Speed Parameter
8436	8568	31.8°	.917	9339
8958	8794	38.8°	.899	9779
9499	8717	54.3°	.859	10147
10385	9010	74.8°	.806	11181
10708	9263	75.8°	.803	11532
11144	9607	75.8°	.803	11961

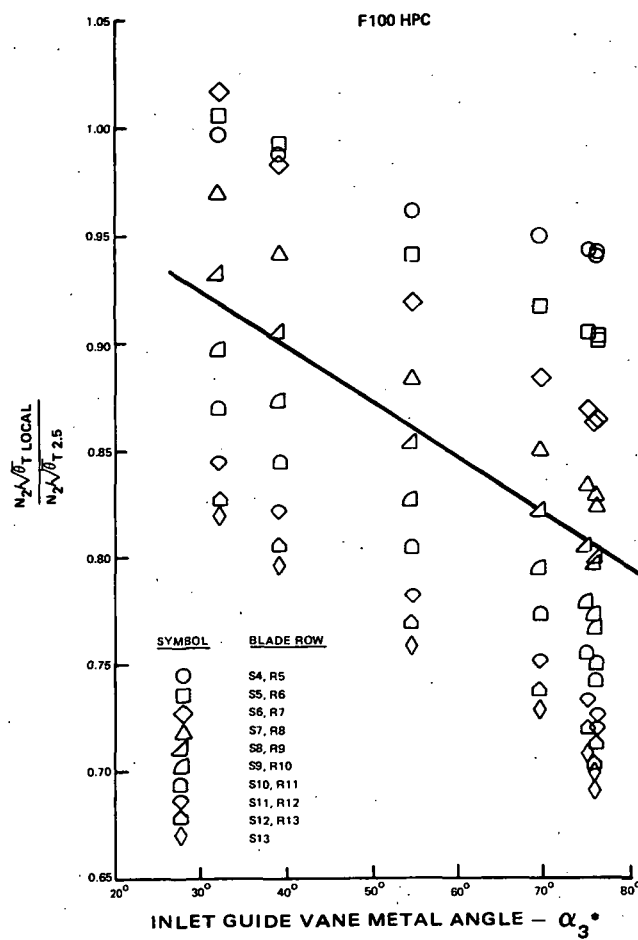


Figure 5 Influence of Variable Geometry on the Relationship Between Local and Inlet Corrected Rotor Speed

Interpolation of Performance Characteristics

In the process of obtaining the multiple segment parallel compressor solution, non-uniform flow effects are used in conjunction with uniform flow compressor performance to define the circumferential flow distribution. In general, the uniform flow performance is required at some local corrected rotor speed which is not equal to any of the values used to construct the compressor blade row characteristics. Hence, it is required to obtain values for the required parameter (ψ or λ) from higher and lower rotor speeds, and then interpolate between the speeds. The standard interpolation procedure used in the model for a fixed geometry compressor is based upon a fixed value of ϕ . This procedure is adequate for fixed geometry because the variation of compressor mass flow with rotor speed is incorporated in the definition of ϕ . Hence the same ϕ can be used to determine ψ or λ at the higher and lower rotor speeds. The ψ or λ can then be interpolated linearly to define the value at the desired rotor speed.

In a variable geometry compressor, however, the mass flow parameter ϕ varies with vane angle as well as rotor speed. Fortunately, there is a linear relationship between maximum flow capacity of a cascade of vanes and the sine of the vane chord angle. Applying this relationship yields the following interpolation procedure:

$$\phi_X = \phi \frac{\sin \alpha_X}{\sin \alpha}$$

where:	ϕ_X	=	ϕ at rotor speed "X" which is higher or lower than local rotor speed and lies on a known blade row characteristic used to provide values of ψ and λ for interpolation.
	ϕ	=	level of ϕ at which values of ψ and λ are to be found.
	α	=	actual vane chord angle (measured from cascade plane) for rotor speed at which performance is required
	α_X	=	vane chord angle corresponding to known blade row characteristic

Using this relationship, the appropriate values of ϕ are determined for the higher and lower rotor speeds. These individual values of ϕ are used to provide two values of ψ or λ which are then interpolated linearly on the basis of the "speed parameter".

Model Verification

The reproduction of the F100(3) uniform inlet performance by the model serves as a check for the procedures used to set axial lengths and flow angles and to interpolate characteristic performance curves.

Figure 6 shows the predicted uniform inlet fan performance and stall points for the fan in comparison with available data. The good agreement serves to verify the model's validity for this component. Furthermore, a check has been made to compare the fan rig performance with that obtained with the NASA LeRC F100 (3) engine, XD11. This comparison concerned the speed-airflow relation along the nominal engine operating line. The engine and rig airflows were found to be in agreement within 0.5% at a given low rotor corrected speed.

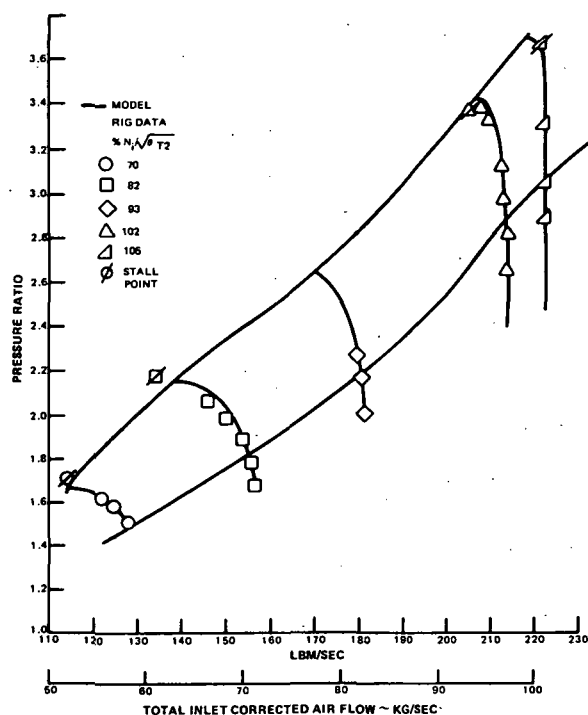


Figure 6(A) Fan OD Performance ~
Comparison of Model and
Rig Data

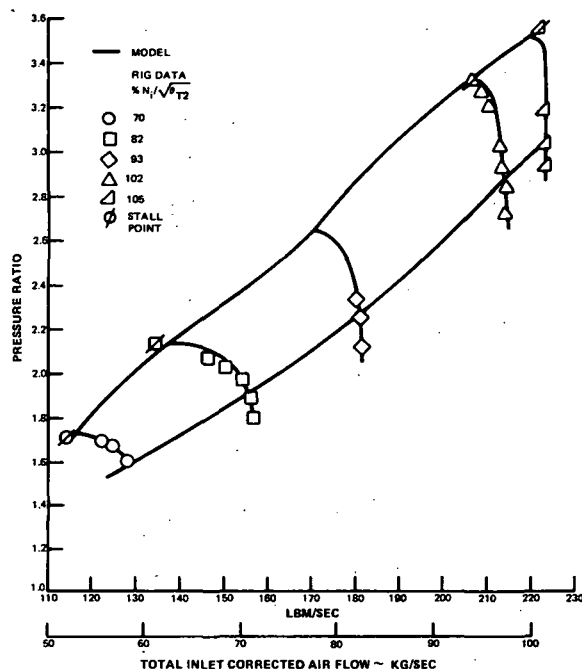


Figure 6(B) Fan ID Performance ~
Comparison of Model and
Rig Data

A similar comparison was made for the high pressure compressor. This comparison revealed that the NASA LeRC engine operates with a different high pressure compressor variable vane schedule (RCVV) than that in FX208, the F100 (3) core engine which was used to generate the model's performance characteristics. Both of these schedules are shown in Figure 7. The primary impact of this difference is a shift in the speed-airflow relation, particularly at lower corrected rotor speeds. Consequently, the model characteristics were altered to provide a high pressure compressor which was more representative of the NASA LeRC engine. The comparison of the model calculations with the FX208 data on Figure 8 shows the expected flow shift consistent with the vane schedule change. Note that two interpolated rotor speed values are also included in Figure 8. These speed lines serve to verify the model's interpolation capability.

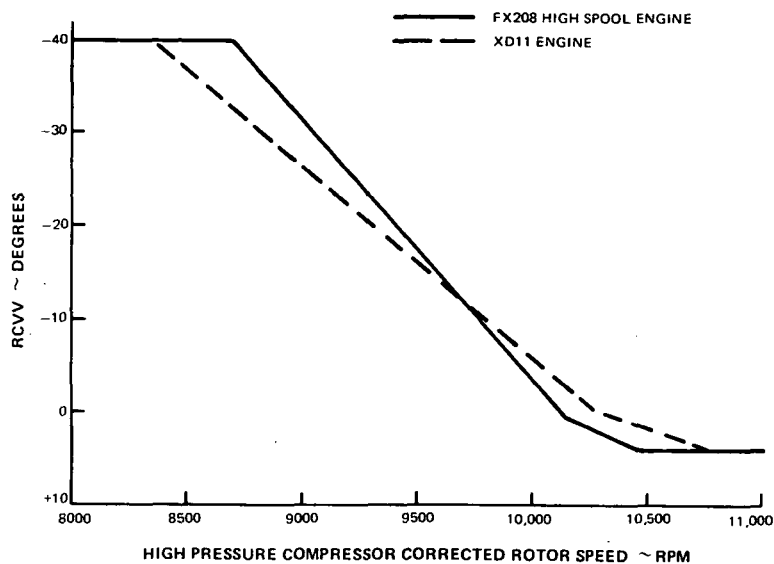


Figure 7 Comparison of HPC Variable Vane Schedules in FX208 and XD11

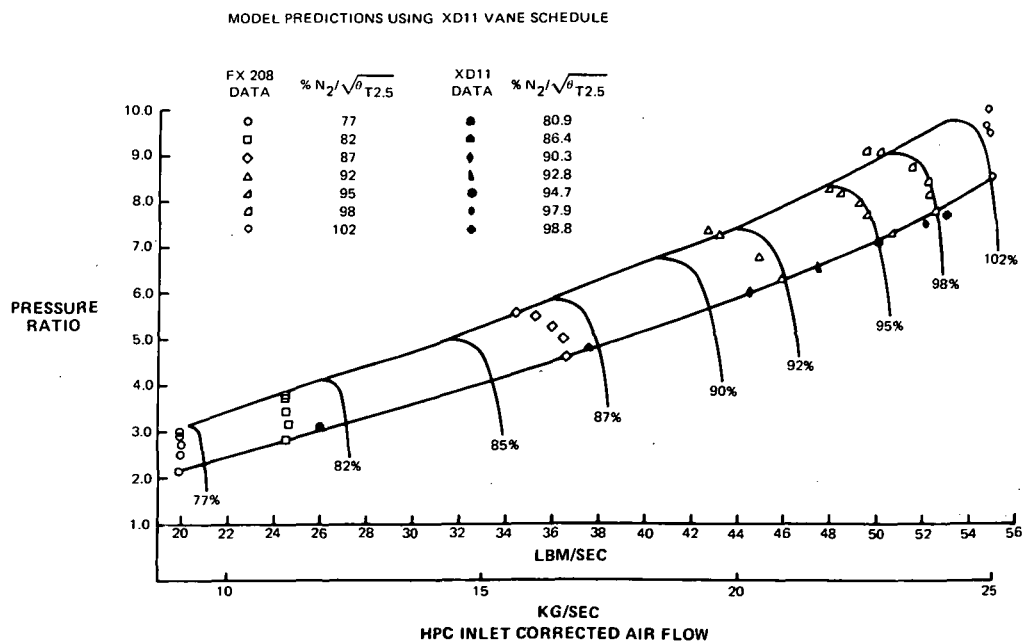


Figure 8 Verification of Model Applicability to XD11 Engine High Pressure Compressor

The most severe test for the non-uniform flow capability concerns inlet temperature distortion. In such a case, there exists a wide range of combinations of vane angle and corrected rotor speed around the circumference. The model's capability for handling this was checked by comparing the model prediction with available F100 high compressor rig data with inlet temperature distortion. The range in inlet temperature was approximately 10% ($T_{TMax} - T_{TMin} / T_{TAvg}$). The rotor speed range covers an area over which the vane schedule varies significantly. The model test case results are compared in Figure 9 with data from an early version of the F100 compressor run at a similar rotor speed. Both the shift in flow capacity and loss in stall line pressure ratio appear to be comparable.

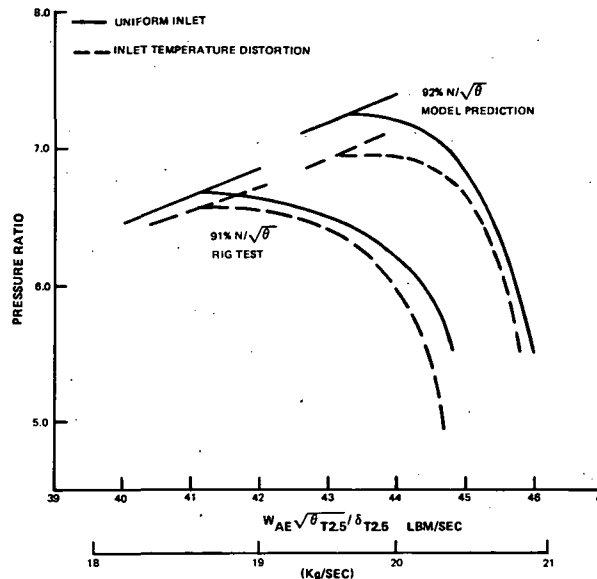


Figure 9 Verification of Model Capability For Analyzing Circumferential Temperature Distortion

A similar treatment is applied to the F100(3) fan characteristics. While no temperature distortion data are currently available to evaluate the entire engine compression system, the isolated compressor results appear to establish the validity of the procedure.

The entire F100 (3) compression system was evaluated, however, for a 180° inlet total pressure distortion. The point of operation selected for this calculation was the following:

Total Corrected Airflow	148.5 lbm/sec. (67.5 Kg/sec.)
Bypass Ratio	1.10
Low Rotor Corrected Speed - $N_1 \sqrt{\theta_2} \text{ AVG}$	7,700 rpm
High Rotor Mechanical Speed	10,862 rpm
High Rotor Corrected Speed - $N_2 \sqrt{\theta_2.5} \text{ AVG}$	9,839 rpm
"Sensed" High Rotor Corrected Speed	9,882 rpm

A complete description of the calculated flow properties, including incidence and blade loading parameters, is included in the Appendix for this point under uniform and distorted flow conditions. Note that the "sensed" high rotor corrected speed differs slightly from the actual value. This results from locating the vane control temperature sensors for the high pressure compressor in the fan duct. The difference between the "sensed" and actual corrected speed is a reflection of the lower exit temperature in the fan duct relative to the high pressure compressor inlet.

For the distorted inlet case, the low rotor corrected speed and high rotor mechanical speed were held constant. The inlet distortion was oriented with the low total pressure region centered at the top (0°) of the engine. The distortion amplitude was varied until a calculated stall point was reached with the engine on its normal operating line. The required distortion amplitude was predicted to be $0.45 (P_{t \text{ max}} - P_{t \text{ min}})/P_{t \text{ avg}}$. This level is consistent with available engine stall margin and agrees favorably with the value of 0.43 predicted using the P&WA stability audit calibration for the F100(3) engine at this test case condition.

A distortion of this magnitude results in a significant predicted loss in high pressure compressor flow capacity. This flow capacity shift results in a predicted increase in fan core pressure ratio. Consequently, the average fan core operating point is above the normal operating line for the rotor speed used in this calculation. Under distorted inlet conditions, the actual engine would likely rematch to a condition with different relative values of rotor speed. It is also likely that total corrected airflow would be reduced and bypass ratio increased at the high compressor rotor speed used in these calculations. The multiple segment model is not intended to predict this engine rematch since it deals only with the compression system and does not reflect the other engine components. Consequently, the actual point of engine operation with this distortion is subject to these effects and will be different than that assumed in the model. It is likely, however, that the predicted critical distortion level is not sensitive to the precise match point since available stall margin does not vary significantly over the expected range of operation.

The average distorted operating conditions for the fan and high pressure compressor are shown in Figures 10 and 11, respectively. At the predicted stall point, the range of predicted performance for eighteen individual segments are also shown for both components. Note that the minimum airflow point is below the uniform inlet stall airflow for the high pressure compressor and core portion of the fan but not for the duct portion of the fan. In this example, therefore, it is predicted that the instability is initiated in the engine core stream rather than the fan duct stream. This result agrees with the P&WA F100(3) stability audit.

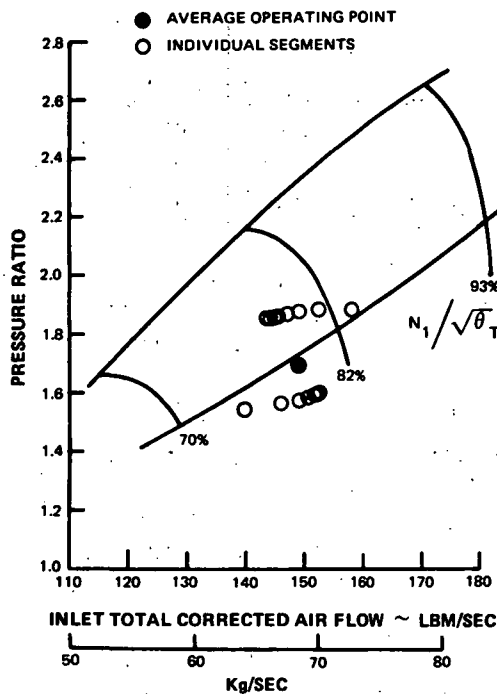


Figure 10(A) Fan Duct Performance With
Inlet Distortion $\sim 80\% N_1/\sqrt{\theta} T_2 \sim$
 $\Delta P_T/P_T = 0.45$

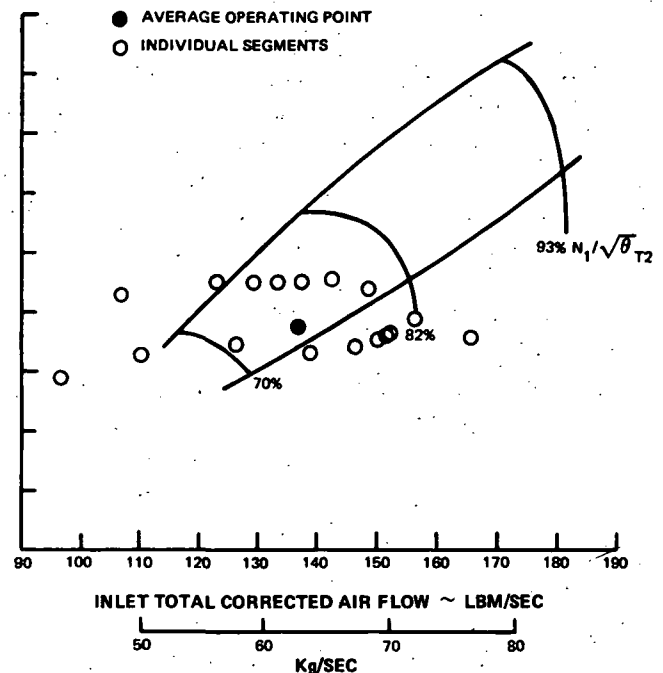


Figure 10(B) Fan Core Performance With
Inlet Distortion $\sim 80\% N_1/\sqrt{\theta} T_2 \sim$
 $\Delta P_T/P_T = 0.45$

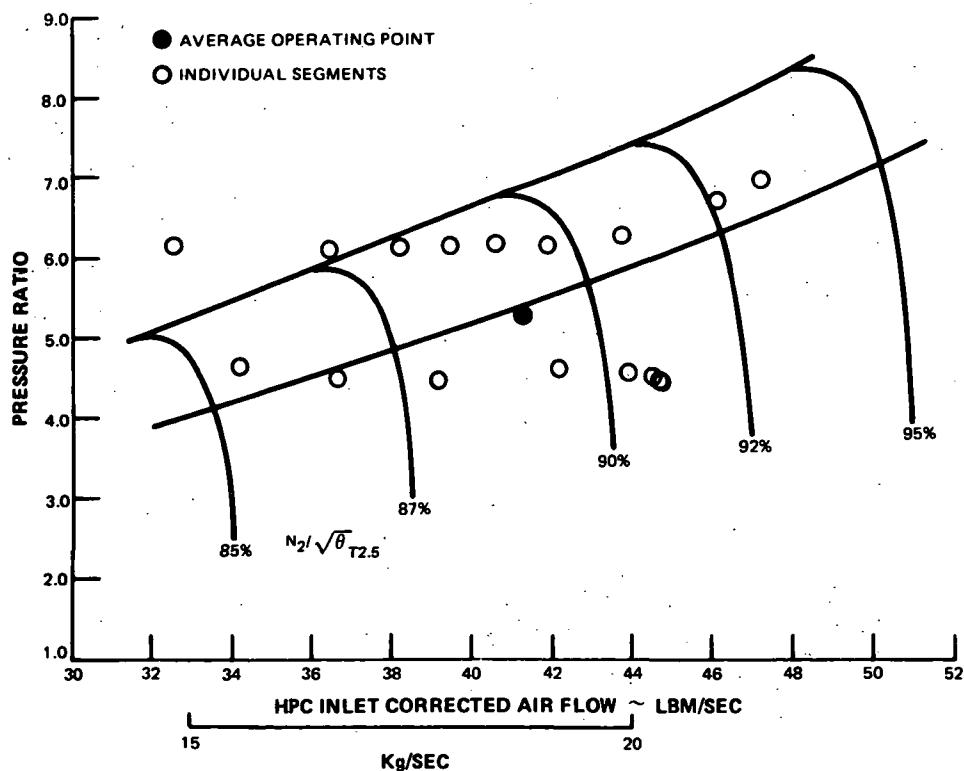


Figure 11 High Pressure Compressor Performance With Inlet Distortion $\sim 90\% N_2/\sqrt{\theta} T_{2.5}$
 $\Delta P_T/P_T = 0.45$

The transfer and attenuation of the distortion through the F100 (3) engine are depicted in Figures 12 through 14. In these figures the total pressure, static pressure and total temperature distortions are shown at the fan inlet and exit as well as the high pressure compressor inlet and exit stations. As can be seen in these figures, the total pressure distortion is effectively attenuated, particularly in the engine core. Consistent with this attenuation is the large total temperature distortion generated by both the fan and the high pressure compressor. In addition, the distortions have rotated circumferentially as they progressed through the engine. The amount of rotation is related to the acoustic and particle path swirls shown in Figures 15 and 16. As indicated previously, the inlet distortion for this particular case was oriented with the low total pressure region centered at top dead center of the engine. Consequently, the sensor controlling the high pressure compressor variable vanes (located at 157° measured in rotor direction from TDC) measures a temperature which is slightly below the average (see Figure 14). Therefore, the vanes are set at a position consistent with the "sensed" corrected rotor speed which is higher than the true average. A different distortion orientation would therefore be expected to modify the results of the model. This would be particularly true if the sensor was aligned with either the minimum or maximum temperatures shown at 305° and 125° , respectively, in Figure 14. The wide range in predicted temperatures demonstrates the importance of incorporating the variable vane geometry capability in the model.

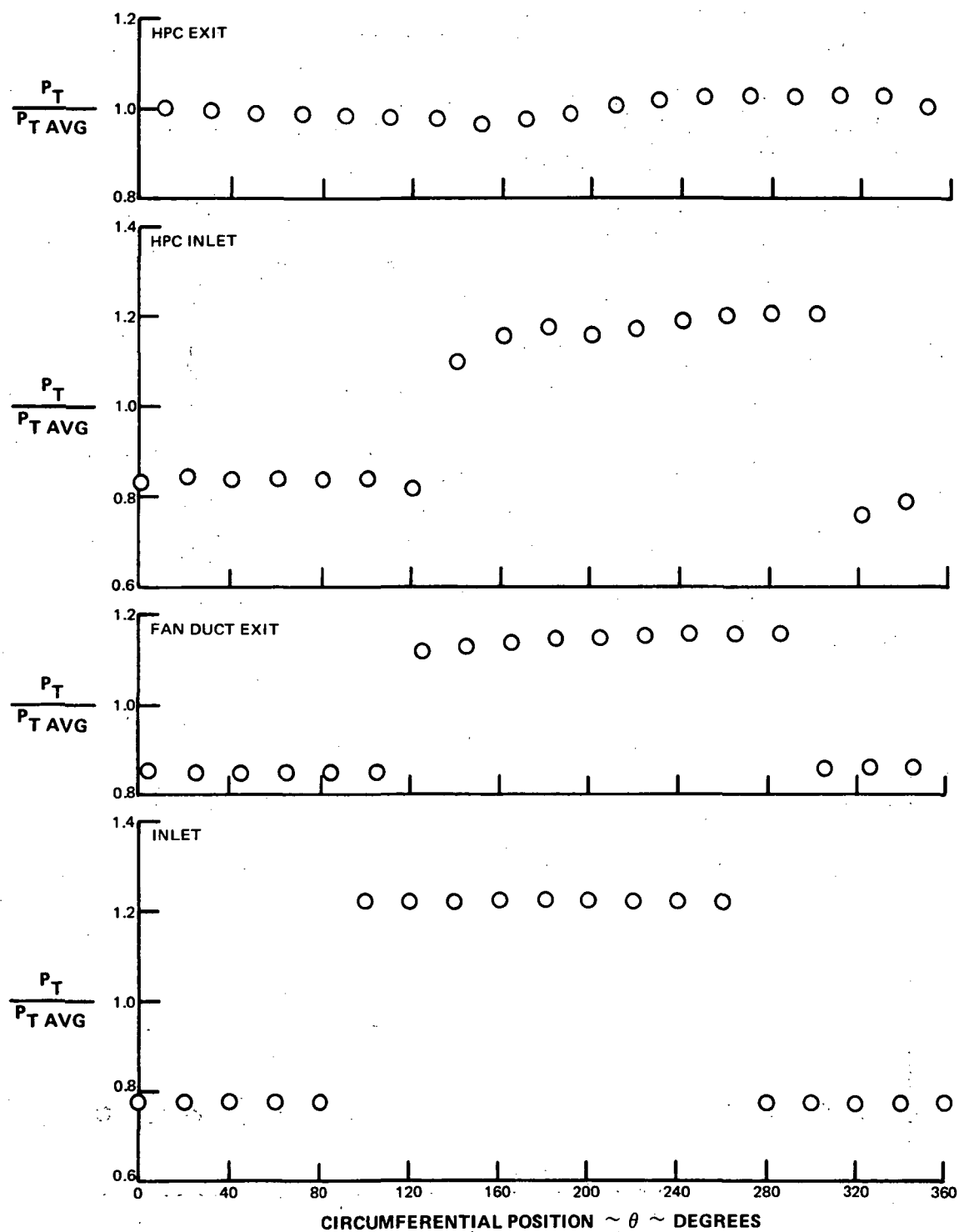


Figure 12 $\left(\frac{P_T}{P_{T \text{ avg}}} \right)$ Circumferential Variation of Total Pressure

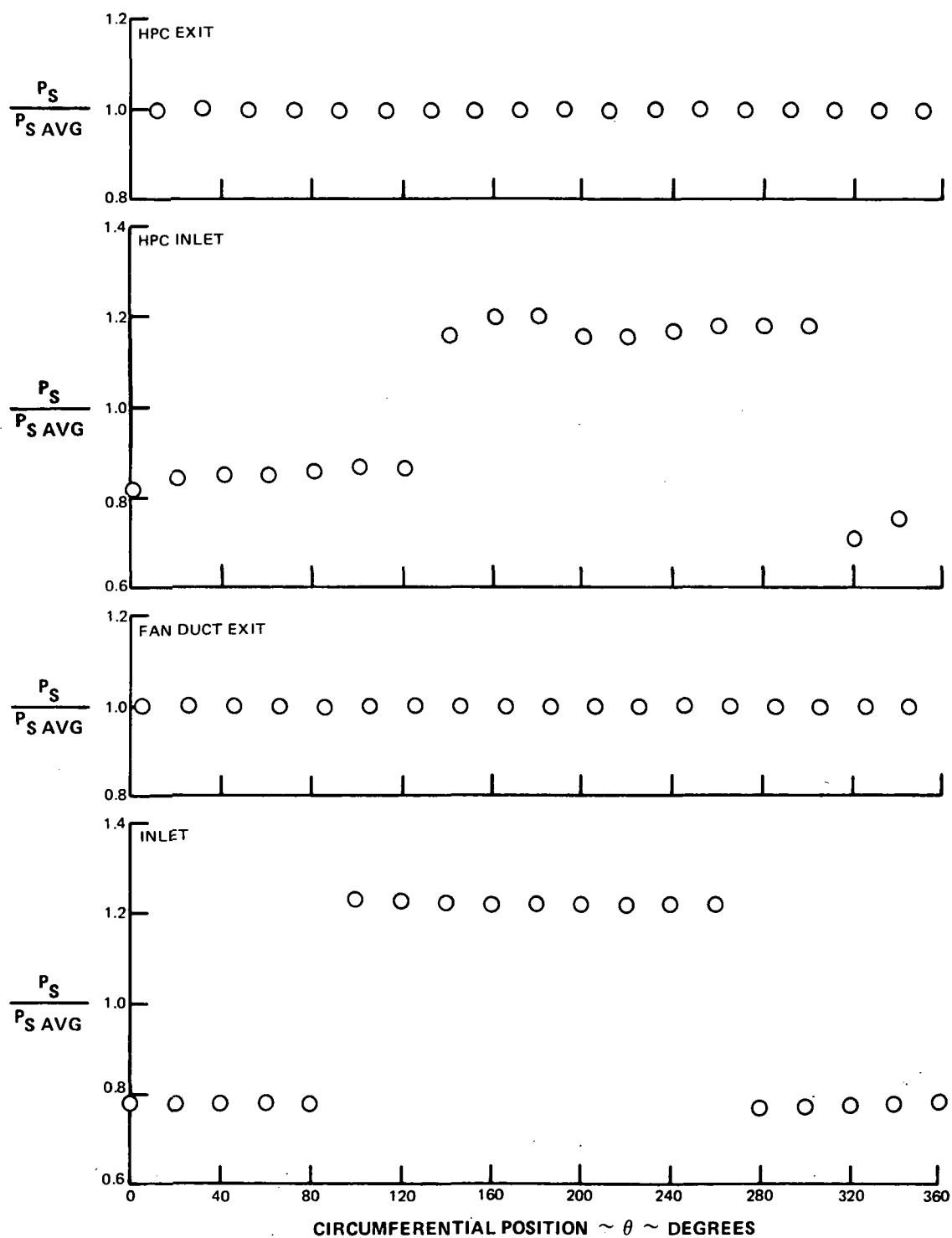


Figure 13 $\left(\frac{P_S}{P_{S\text{ avg}}} \right)$ Circumferential Variation of Static Pressure

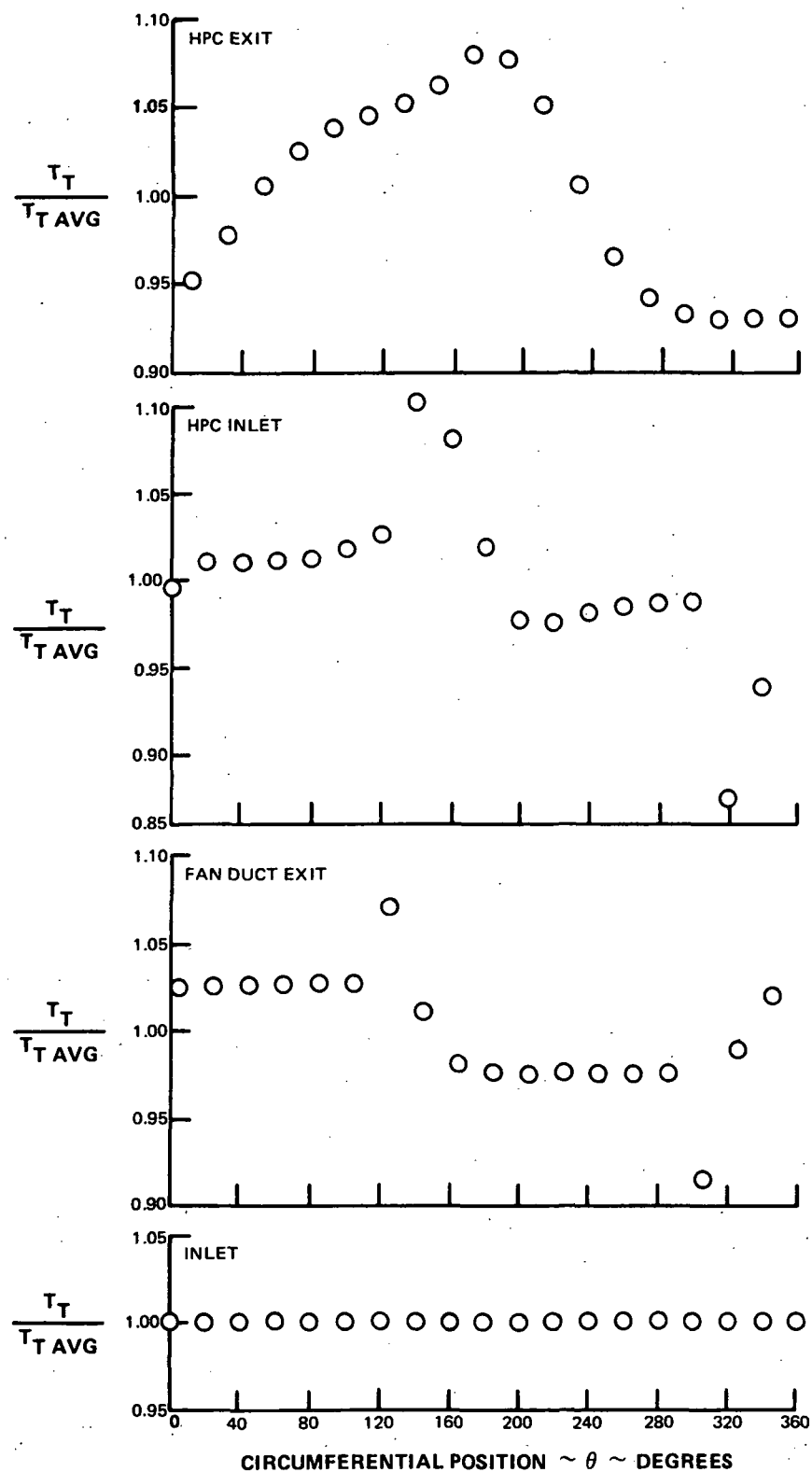


Figure 14 $\left(\frac{T_T}{T_{T\text{ avg}}} \right)$ Circumferential Variation of Total Pressure

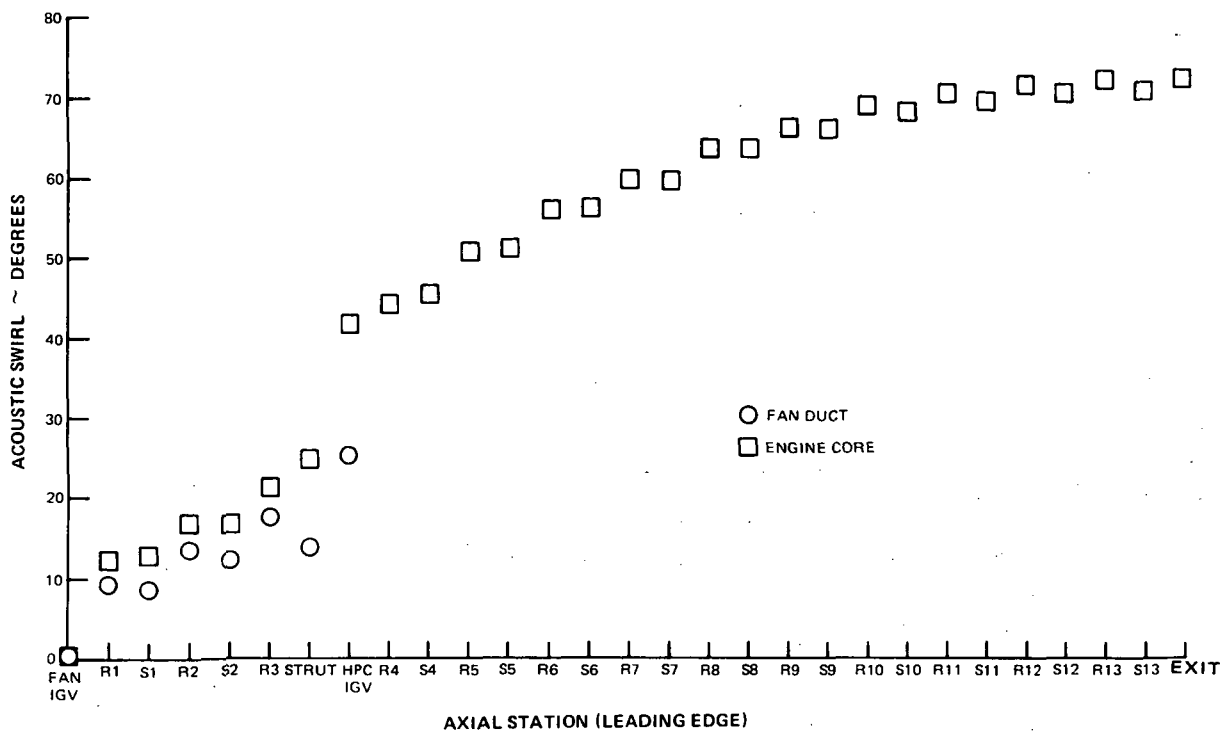


Figure 15 Predicted Acoustic Swirl From Inlet Distortion Test Case

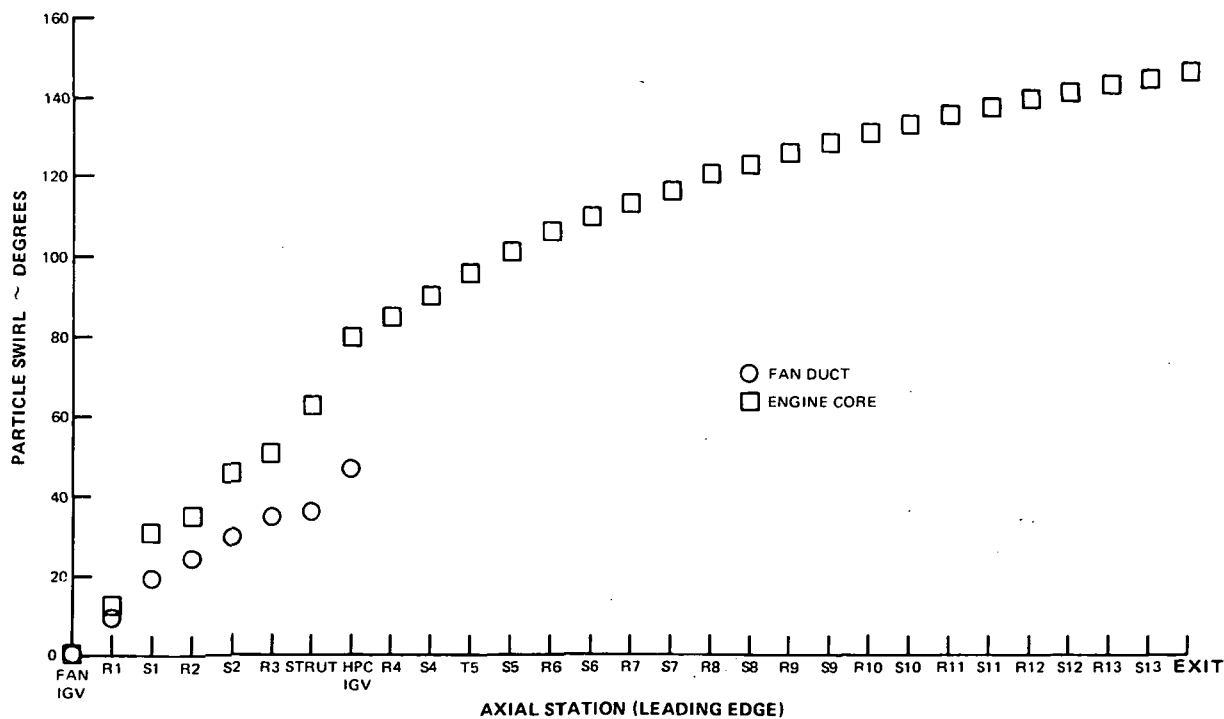


Figure 16 Predicted Swirl From Inlet Distortion Test Case

CONCLUSIONS AND RECOMMENDATIONS

- 1) The multiple segment parallel compressor model has been upgraded to include capabilities for predicting the distorted flow performance of variable geometry compressors.
- 2) The model has further been verified for application to the F100 (3) turbofan engine compression system.
- 3) Model predictions for the F100 high compressor response to inlet temperature distortion compare favorably with available data.
- 4) Model predictions indicate that a 180° total pressure distortion with an amplitude of 0.45 (MAX-MIN)/AVG. and centered on top dead center will induce a stall in the F100 (3) at 90 percent corrected high rotor on the nominal operating line. No engine data is available to confirm this prediction but the result is in close agreement with the F100 (3) stability audit.
- 5) The model should be applied for predicting F100 (3) engine response to both pressure and/or temperature distortion. An experimental program should then be carried out to verify its accuracy.

SYMBOLS

ψ	Pressure Rise Parameter
λ	Temperature Rise Parameter
ϕ	Mass Flow Parameter
P	Pressure
T	Temperature
W	Mass Flow Rate
A	Area
N	Rotor Speed
θ	Total Temperature divided by Standard Day Temperature
δ	Total Pressure divided by Standard Day Pressure
α	Vane Angle
RCVV	High Pressure Compressor Vane Schedule

Subscripts

S	Static Conditions
T	Total or Stagnation Conditions
Des	Design Value
x	Variable
2	High Speed Rotor
2.5	High Compressor Inlet Plane
IGV	Inlet Guide Vane
3	Vane Exit Plane

Superscripts

*	Metal Angle
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REFERENCES

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APPENDIX

EXAMPLE CASE PROGRAM OUTPUT

LEGEND OF SYMBOLS FOR DETAILED DISTORTION DECK PRINT

Symbol	Description
ALPHA IN DEG	Blade inlet flow angle (absolute frame of reference) measured in degrees
AXIAL VEL	Axial velocity/average axial velocity
AXVELAVG	Circumferential average axial velocity
BETA IN DEG	Blade inlet flow angle (relative frame of reference) measured in degrees
BYPASS RATIO	Ratio of fan duct flow to engine flow
CORR FLOW	Corrected flow
DEG	Degrees
DEG K	Degrees Kelvin
DEG R	Degrees Rankine
DF	Diffusion factor
EXIT	Axial station located at the exit plane of the last row
FLOW SWIRL	Circumferential pressure distortion swirl through the engine
FPS	Feet per second
HPC	High pressure compressor
IGV	Inlet guide vane
INCIDENCE IN DEG	Blade incidence angle measured in degrees
KG/SEC	Kilograms per second
LBM/SEC	Pounds-mass per second

APPENDIX (Cont'd)

Symbol	Description
MAX-MIN/AVG	Depth of distortion - Maximum total pressure minus the minimum total pressure over the average total pressure
MN	Mach number
MPS	Meters per second
NICORR	Low rotor speed corrected to the inlet
N2CORR	High rotor speed corrected to Station 3.0
N2/N1 (MECH)	Ratio of high rotor mechanical speed to low rotor mechanical speed
PA	Pascals (Newton/Square Meter)
PARTICLE SWIRL	Circumferential particle swirl through the engine
PRESS RATIO	Pressure ratio
PS	Static pressure/average static pressure
PSAVG	Circumferential average static pressure
PSIA	Pounds pressure per square inch absolute
PT	Total pressure/average total pressure
PTAVG	Circumferential average total pressure
REL VEL	Relative velocity/average relative velocity
RVELAVG	Average relative velocity
SEG NO	Segment number
THETA	Circumferential position in direction of rotation
THETM	Theta-minus - extent of distortion
TT	Total temperature/average total temperature

APPENDIX (Cont'd)

Symbol	Description
TTAVG	Circumferential average total temperature
U	Mean diameter rotor velocity
VEL	Velocity/average velocity (absolute)
VELAVG	Circumferential average velocity
WBL	Cross flow from segment to external cavity
WCORR	Total corrected air flow

**DETAILED FLOW PROPERTY
CALCULATIONS WITH UNIFORM
INLET**

WDCORR=148.5LBM/SEC= 67.4KG/SEC N1CORR= 7700.RPM N2CORR= 9839.RPM N2/N1(MECH)=1.410
 THETH= 0.DEG BYPASS RATIO=1.100 MAX-MIN/AVG=0.0

FAN LD OUTPUT

CORR FLOW PRESS RATIO EFFICIENCY
 FAN QD PERFORMANCE 77.79 LBM/SEC 1.752 0.838
 35.28 KG/SEC

--- ROW OUTPUT ---

IGV	FLOW SWIRL= 0.0 DEG PTAVG= 14.79PSIA = 101353.PA RVELAVG=1092.6FPS = 330.0MPS	PARTICLE SWIRL= 0.0 DEG TTAVG= 519.0DEG R = 288.3DEG K AXVELAVG= 354.1FPS =107.9MPS	PSAVG= 13.69PSIA = 94405.PA VELAVG= 354.1FPS =107.9MPS U=1023.FPS = 312.MPS	THETA	SEG	VEL	MN	PS	PT	TT	WBL	WBL	DF	INCIDENCE	ALPHA	AXIAL	REL
				NO							LBM/SEC	KG/SEC		IN DEG	IN DEG	VEL	VEL
				9.	1	1.000	0.3200	1.0000	1.0000	1.0000	0.0	0.0	-0.563	0.0	90.0	1.000	1.000
STAGE 1 ROTOR	FLOW SWIRL= 9.17DEG PTAVG= 14.75PSIA = 101712.PA RVELAVG= 915.6FPS = 279.1MPS	PARTICLE SWIRL= 9.17DEG TTAVG= 519.0DEG R = 288.3DEG K AXVELAVG= 389.4FPS =118.7MPS	PSAVG= 13.24PSIA = 91311.PA VELAVG= 435.2FPS =132.6MPS U=1023.FPS = 312.MPS	THETA	SEG	VEL	MN	PS	PT	TT	WBL	WBL	DF	INCIDENCE	BETA	AXIAL	REL
				NO							LBM/SEC	KG/SEC		IN DEG	IN DEG	VEL	VEL
				9.	1	1.000	0.3954	1.0000	1.0000	1.0000	0.0	0.0	0.275	8.33	25.2	1.000	1.000
STATOR	FLOW SWIRL= 8.46DEG PTAVG= 18.78PSIA = 129473.PA RVELAVG= 739.1FPS = 225.3MPS	PARTICLE SWIRL= 18.99DEG TTAVG= 566.3DEG R = 314.6DEG K AXVELAVG= 393.8FPS =120.0MPS	PSAVG= 16.03PSIA = 110541.PA VELAVG= 548.3FPS =167.1MPS U=1007.FPS = 307.MPS	THETA	SEG	VEL	MN	PS	PT	TT	WBL	WBL	DF	INCIDENCE	ALPHA	AXIAL	REL
				NO							LBM/SEC	KG/SEC		IN DEG	IN DEG	VEL	VEL
				8.	1	1.000	0.4806	1.0000	1.0000	1.0000	0.0	0.0	0.413	-2.61	45.9	1.000	1.000
STAGE 2 ROTOR	FLOW SWIRL= 13.33DEG PTAVG= 19.05PSIA = 131379.PA RVELAVG= 973.3FPS = 296.7MPS	PARTICLE SWIRL= 23.65DEG TTAVG= 566.3DEG R = 314.6DEG K AXVELAVG= 409.0FPS =124.7MPS	PSAVG= 17.35PSIA = 119609.PA VELAVG= 424.4FPS =129.4MPS U= 997.FPS = 304.MPS	THETA	SEG	VEL	MN	PS	PT	TT	WBL	WBL	DF	INCIDENCE	BETA	AXIAL	REL
				NO							LBM/SEC	KG/SEC		IN DEG	IN DEG	VEL	VEL
				13.	1	1.000	0.3686	1.0000	1.0000	1.0000	0.0	0.0	0.198	5.15	24.8	1.000	1.000
STATOR	FLOW SWIRL= 12.03DEG PTAVG= 23.25PSIA = 160277.PA RVELAVG= 833.9FPS = 254.2MPS	PARTICLE SWIRL= 29.32DEG TTAVG= 606.4DEG R = 336.9DEG K AXVELAVG= 423.2FPS =129.0MPS	PSAVG= 20.52PSIA = 141513.PA VELAVG= 504.8FPS =153.9MPS U= 994.FPS = 303.MPS	THETA	SEG	VEL	MN	PS	PT	TT	WBL	WBL	DF	INCIDENCE	ALPHA	AXIAL	REL
				NO							LBM/SEC	KG/SEC		IN DEG	IN DEG	VEL	VEL
				12.	1	1.000	0.4256	1.0000	1.0000	1.0000	0.0	0.0	0.027	-32.97	57.0	1.000	1.000

STAG 3
 MOTOR

FLOW SWIRL= 17.28DEG PARTICLE SWIRL= 34.57DEG PS AVG= 20.21PSIA = 139354.PA
 PTAVG= 23.11PSIA = 159365.PA TTAVG= 606.4DEG R = 336.9DEG K VELAVG= 523.7FPS = 159.6MPS
 KVELAVG= 927.4FPS = 282.8MPS AXVELAVG= 487.2FPS = 148.5MPS U= 982.FPS = 299.MPS

THETA	SEG	VEL	MN	PS	PT	TT	WBL	WBL	DF	INCIDENCE	BETA	AXIAL	REL
	NO						LBM/SEC	KG/SEC		IN DEG	IN DEG	VEL	VEL
17.	1	1.000	0.4422	1.0000	1.0000	1.0000	0.0	0.0	-0.171	-7.47	31.7	1.000	1.000

STAIL

FLOW SWIRL= 13.85DEG PARTICLE SWIRL= 35.73DEG PS AVG= 22.32PSIA = 153665.PA
 PTAVG= 25.99PSIA = 179161.PA TTAVG= 626.7DEG R = 348.2DEG K VELAVG= 566.3FPS = 172.6MPS
 KVELAVG= 1046.1FPS = 318.9MPS AXVELAVG= 559.9FPS = 170.4MPS U= 975.FPS = 297.MPS

THETA	SEG	VEL	MN	PS	PT	TT	WBL	WBL	DF	INCIDENCE	ALPHA	AXIAL	REL
	NO						LBM/SEC	KG/SEC		IN DEG	IN DEG	VEL	VEL
14.	1	1.000	0.4716	1.0000	1.0000	1.0000	0.0	0.0	-0.789	-28.76	80.8	1.000	1.000

EXIT

FLOW SWIRL= 25.04DEG PARTICLE SWIRL= 46.93DEG PS AVG= 18.87PSIA = 130082.PA
 PTAVG= 25.76PSIA = 177583.PA TTAVG= 626.7DEG R = 348.2DEG K VELAVG= 800.8FPS = 244.1MPS
 KVELAVG= 0.0FPS = 0.0MPS AXVELAVG= 0.0FPS = 0.0MPS U= 975.FPS = 297.MPS

THETA	SEG	VEL	MN	PS	PT	TT	WBL	WBL	DF	INCIDENCE		AXIAL	REL
	NO						LBM/SEC	KG/SEC		IN DEG	IN DEG	VEL	VEL
25.	1	1.000	0.6822	1.0000	1.0000	1.0000	0.0	0.0	0.0	0.0	0.0	0.0	0.0

CORE ENGINE OUTPUT

CORR FLOW

PRESS RATIO

EFFICIENCY

LOW SPOOL PERFORMANCE

70.71 LBM/SEC
32.08 KG/SEC

1.802

0.841

RAKE CORRECTED PRESSURE RATIO

1.802

HIGH SPOOL PERFORMANCE

43.30 LBM/SEC
19.64 KG/SEC

5.698

0.802

--- ROW OUTPUT ---

ICV

FLOW SWIRL= 0.0 DEG

PARTICLE SWIRL= 0.0 DEG

PSAVG= 13.69PSIA = 94405.PA

PTAVG= 14.70PSIA = 101353.PA

TTAVG= 519.0DEG R = 288.3DEG K

VELAVG= 354.1FPS = 107.9MPS

RVELAVG= 750.0FPS = 228.6MPS

AXVELAVG= 354.1FPS = 107.9MPS

U= 661.FPS = 202.MPS

THETA	SEG	VEL	MN	PS	PT	TT	WBL LBM/SEC	WBL KG/SEC	DF	INCIDENCE IN DEG	ALPHA IN DEG	AXIAL VEL	REL VEL
0.	1	1.000	0.3200	1.0000	1.0000	1.0000	0.0	0.0	-2.95	0.0	90.0	1.000	1.000

STAGE 1
ROTOR

FLOW SWIRL= 12.06DEG

PARTICLE SWIRL= 12.06DEG

PSAVG= 13.32PSIA = 91810.PA

PTAVG= 14.64PSIA = 100961.PA

TTAVG= 519.0DEG R = 288.3DEG K

VELAVG= 408.8FPS = 124.6MPS

RVELAVG= 684.7FPS = 208.7MPS

AXVELAVG= 388.8FPS = 118.5MPS

U= 690.FPS = 210.MPS

THETA	SEG	VEL	MN	PS	PT	TT	WBL LBM/SEC	WBL KG/SEC	DF	INCIDENCE IN DEG	BETA IN DEG	AXIAL VEL	REL VEL
12.	1	1.000	0.3708	1.0000	1.0000	1.0000	0.0	0.0	0.429	9.50	34.6	1.000	1.000

STATOR

FLOW SWIRL= 11.84DEG

PARTICLE SWIRL= 27.58DEG

PSAVG= 15.11PSIA = 104181.PA

PTAVG= 18.52PSIA = 127675.PA

TTAVG= 560.4DEG R = 311.3DEG K

VELAVG= 616.7FPS = 188.0MPS

RVELAVG= 477.3FPS = 145.5MPS

AXVELAVG= 409.2FPS = 124.4MPS

U= 710.FPS = 216.MPS

THETA	SEG	VEL	MN	PS	PT	TT	WBL LBM/SEC	WBL KG/SEC	DF	INCIDENCE IN DEG	ALPHA IN DEG	AXIAL VEL	REL VEL
12.	1	1.000	0.5468	1.0000	1.0000	1.0000	0.0	0.0	0.511	3.10	41.4	1.000	1.000

STAGE 2
ROTOR

FLOW SWIRL= 16.05DEG

PARTICLE SWIRL= 31.79DEG

PSAVG= 16.88PSIA = 116399.PA

PTAVG= 18.50PSIA = 127580.PA

TTAVG= 560.4DEG R = 311.3DEG K

VELAVG= 417.4FPS = 127.2MPS

RVELAVG= 808.9FPS = 246.6MPS

AXVELAVG= 416.2FPS = 126.8MPS

U= 726.FPS = 221.MPS

THETA	SEG	VEL	MN	PS	PT	TT	WBL LBM/SEC	WBL KG/SEC	DF	INCIDENCE IN DEG	BETA IN DEG	AXIAL VEL	REL VEL
16.	1	1.000	0.3643	1.0000	1.0000	1.0000	0.0	0.0	0.411	2.24	31.0	1.000	1.000

STATOR

FLOW SWIRL= 15.15DEG

PARTICLE SWIRL= 40.29DEG

PSAVG= 20.11PSIA = 138620.PA

PTAVG= 23.78PSIA = 163949.PA

TTAVG= 608.4DEG R = 338.0DEG K

VELAVG= 585.2FPS = 178.4MPS

RVELAVG= 559.7FPS = 170.6MPS

AXVELAVG= 429.1FPS = 130.5MPS

U= 760.FPS = 232.MPS

THETA	SEG	VEL	MN	PS	PT	TT	WBL LBM/SEC	WBL KG/SEC	DF	INCIDENCE IN DEG	ALPHA IN DEG	AXIAL VEL	REL VEL
15.	1	1.000	0.4957	1.0000	1.0000	1.0000	0.0	0.0	0.312	-14.22	47.0	1.000	1.000

STAGE 3

WITCH

FLOW SWIRL= 19.88DEG PARTICLE SWIRL= 45.03DEG PSAVG= 21.04PSIA = 145079.PA
PTAVG= 23.63PSIA = 162894.PA TTAVG= 608.4DEG R = 338.0DEG K VELAVG= 488.0FPS = 148.7MPS
RVELAVG= 804.3FPS = 245.2MPS AXVELAVG= 472.0FPS = 143.9MPS U= 775.FPS = 236.MPS

THETA	SEG	VEL	MN	PS	PT	TT	WBL	WBL	DF	INCIDENCE	BETA	AXIAL	REL
	NO						LBM/SEC	KG/SEG		IN DEG	IN DEG	VEL	VEL
20.	1	1.000	0.4103	1.0000	1.0000	1.0000	0.0	0.0	0.219	-3.33	35.9	1.000	1.000

STATOR

FLOW SWIRL= 21.42DEG PARTICLE SWIRL= 54.27DEG PSAVG= 22.93PSIA = 158128.PA
PTAVG= 26.50PSIA = 192741.PA TTAVG= 632.2DEG R = 351.2DEG K VELAVG= 554.8FPS = 169.1MPS
RVELAVG= 686.0FPS = 209.1MPS AXVELAVG= 471.3FPS = 143.7MPS U= 791.FPS = 241.MPS

THETA	SEG	VEL	MN	PS	PT	TT	WBL	WBL	DF	INCIDENCE	ALPHA	AXIAL	REL
	NO						LBM/SEC	KG/SEG		IN DEG	IN DEG	VEL	VEL
21.	1	1.000	0.4596	1.0000	1.0000	1.0000	0.0	0.0	0.163	-6.16	58.2	1.000	1.000

STATOR

FLOW SWIRL= 38.39DEG PARTICLE SWIRL= 71.24DEG PSAVG= 23.34PSIA = 160947.PA
PTAVG= 26.49PSIA = 182674.PA TTAVG= 632.2DEG R = 351.2DEG K VELAVG= 519.7FPS = 158.4MPS
RVELAVG= 913.2FPS = 278.3MPS AXVELAVG= 474.4FPS = 144.6MPS U= 992.FPS = 302.MPS

THETA	SEG	VEL	MN	PS	PT	TT	WBL	WBL	DF	INCIDENCE	ALPHA	AXIAL	REL
	NO						LBM/SEC	KG/SEG		IN DEG	IN DEG	VEL	VEL
38.	1	1.000	0.4294	1.0000	1.0000	1.0000	0.0	0.0	-1.03	12.80	65.9	1.000	1.000

STAGE 4
ROTOR

FLOW SWIRL= 41.17DEG PARTICLE SWIRL= 74.03DEG PSAVG= 22.87PSIA = 157716.PA
PTAVG= 26.56PSIA = 183141.PA TTAVG= 632.2DEG R = 351.2DEG K VELAVG= 563.7FPS = 171.8MPS
RVELAVG= 903.6FPS = 275.4MPS AXVELAVG= 513.7FPS = 156.6MPS U= 975.FPS = 297.MPS

THETA	SEG	VEL	MN	PS	PT	TT	WBL	WBL	DF	INCIDENCE	BETA	AXIAL	REL
	NO						LBM/SEC	KG/SEG		IN DEG	IN DEG	VEL	VEL
41.	1	1.000	0.4673	1.0000	1.0000	1.0000	0.0	0.0	0.404	5.95	34.6	1.000	1.000

STATOR

FLOW SWIRL= 42.23DEG PARTICLE SWIRL= 81.55DEG PSAVG= 27.25PSIA = 197864.PA
PTAVG= 35.26PSIA = 243096.PA TTAVG= 695.5DEG R = 386.4DEG K VELAVG= 770.6FPS = 234.9MPS
RVELAVG= 689.4FPS = 208.3MPS AXVELAVG= 545.9FPS = 166.4MPS U= 955.FPS = 291.MPS

THETA	SEG	VEL	MN	PS	PT	TT	WBL	WBL	DF	INCIDENCE	ALPHA	AXIAL	REL
	NO						LBM/SEC	KG/SEG		IN DEG	IN DEG	VEL	VEL
42.	1	1.000	0.6189	1.0000	1.0000	1.0000	0.0	0.0	0.306	-3.91	45.1	1.000	1.000

STAGE 5
ROTOR

FLOW SWIRL= 47.84DEG PARTICLE SWIRL= 87.15DEG PSAVG= 29.55PSIA = 203708.PA
PTAVG= 35.14PSIA = 242300.PA TTAVG= 695.5DEG R = 386.4DEG K VELAVG= 636.0FPS = 193.8MPS
RVELAVG= 867.1FPS = 264.3MPS AXVELAVG= 568.7FPS = 173.3MPS U= 939.FPS = 286.MPS

THETA	SEG	VEL	MN	PS	PT	TT	WBL	WBL	DF	INCIDENCE	BETA	AXIAL	REL
	NO						LBM/SEC	KG/SEG		IN DEG	IN DEG	VEL	VEL
48.	1	1.000	0.5047	1.0000	1.0000	1.0000	0.0	0.0	0.238	-4.09	41.0	1.000	1.000

STATOR

FLOW SWIRL= 47.98DEG PARTICLE SWIRL= 91.91DEG PSAVG= 33.06PSIA = 227929.PA
PTAVG= 42.08PSIA = 290141.PA TTAVG= 737.4DEG R = 409.7DEG K VELAVG= 768.7FPS = 234.3MPS
RVELAVG= 742.5FPS = 226.3MPS AXVELAVG= 596.9FPS = 181.9MPS U= 926.FPS = 282.MPS

THETA	SEG	VEL	MN	PS	PT	TT	WBL	WBL	DF	INCIDENCE	ALPHA	AXIAL	REL
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	NO						LBM/SEC	KG/SEC		IN DEG	IN DEG VEL	VEL	
STAGE 6 ROTOR	48.	1	1.000	0.5985	1.0000	1.0000	1.0000	0.0	0.0	0.212	-12.44	50.9	1.000
FLOW SWIRL= 53.20DEG PARTICLE SWIRL= 97.12DEG PSAVG= 34.47PSIA = 237659.PA PTAVG= 41.93PSIA = 288409.PA TTAVG= 737.4DEG R = 409.7DEG K VELAVG= 690.7FPS = 210.5MPS RVELAVG= 907.6FPS = 276.6MPS AXVELAVG= 636.6FPS = 194.0MPS U= 415.FPS = 279.MPS													
	THETA	SEG	VEL	MN	PS	PT	TT	WBL	WBL	DF	INCIDENCE	BETA	AXIAL
		NO						LBM/SEC	KG/SEC		IN DEG	IN DEG VEL	REL
	53.	1	1.000	0.5341	1.0000	1.0000	1.0000	0.0	0.0	0.167	-6.05	44.5	1.000
STATOR	FLOW SWIRL= 52.98DEG PARTICLE SWIRL= 100.38DEG PSAVG= 37.93PSIA = 261496.PA PTAVG= 48.47PSIA = 334159.PA TTAVG= 785.3DEG R = 436.3DEG K VELAVG= 799.5FPS = 243.7MPS RVELAVG= 818.8FPS = 249.6MPS AXVELAVG= 670.4FPS = 204.3MPS U= 906.FPS = 273.MPS												
	THETA	SEG	VEL	MN	PS	PT	TT	WBL	WBL	DF	INCIDENCE	ALPHA	AXIAL
		NO						LBM/SEC	KG/SEC		IN DEG	IN DEG VEL	REL
	53.	1	1.000	0.6039	1.0000	1.0000	1.0000	0.0	0.0	0.223	-11.58	57.0	1.000
STAGE 7 ROTOR	FLOW SWIRL= 56.45DEG PARTICLE SWIRL= 103.86DEG PSAVG= 41.33PSIA = 284995.PA PTAVG= 50.26PSIA = 346512.PA TTAVG= 785.3DEG R = 436.3DEG K VELAVG= 716.2FPS = 218.3MPS RVELAVG= 999.6FPS = 304.7MPS AXVELAVG= 694.3FPS = 211.6MPS U= 995.FPS = 273.MPS												
	THETA	SEG	VEL	MN	PS	PT	TT	WBL	WBL	DF	INCIDENCE	BETA	AXIAL
		NO						LBM/SEC	KG/SEC		IN DEG	IN DEG VEL	REL
	56.	1	1.000	0.5372	1.0000	1.0000	1.0000	0.0	0.0	0.226	-5.19	44.0	1.000
STATOR	FLOW SWIRL= 56.28DEG PARTICLE SWIRL= 106.64DEG PSAVG= 46.65PSIA = 321639.PA PTAVG= 61.08PSIA = 421166.PA TTAVG= 851.6DEG R = 473.1DEG K VELAVG= 871.6FPS = 265.7MPS RVELAVG= 874.1FPS = 266.4MPS AXVELAVG= 752.3FPS = 229.3MPS U= 885.FPS = 270.MPS												
	THETA	SEG	VEL	MN	PS	PT	TT	WBL	WBL	DF	INCIDENCE	ALPHA	AXIAL
		NO						LBM/SEC	KG/SEC		IN DEG	IN DEG VEL	REL
	56.	1	1.000	0.6350	1.0000	1.0000	1.0000	0.0	0.0	0.176	-19.67	59.7	1.000
STAGE 8 ROTOR	FLOW SWIRL= 60.48DEG PARTICLE SWIRL= 110.84DEG PSAVG= 50.88PSIA = 350809.PA PTAVG= 63.46PSIA = 437529.PA TTAVG= 851.6DEG R = 473.1DEG K VELAVG= 791.6FPS = 241.3MPS RVELAVG= 990.2FPS = 301.8MPS AXVELAVG= 755.0FPS = 230.1MPS U= 979.FPS = 268.MPS												
	THETA	SEG	VEL	MN	PS	PT	TT	WBL	WBL	DF	INCIDENCE	BETA	AXIAL
		NO						LBM/SEC	KG/SEC		IN DEG	IN DEG VEL	REL
	60.	1	1.000	0.5728	1.0000	1.0000	1.0000	0.0	0.0	0.139	-12.28	49.7	1.000
STATOR	FLOW SWIRL= 60.12DEG PARTICLE SWIRL= 112.93DEG PSAVG= 55.36PSIA = 381692.PA PTAVG= 73.80PSIA = 508830.PA TTAVG= 910.3DEG R = 505.7DEG K VELAVG= 929.5FPS = 283.3MPS RVELAVG= 927.6FPS = 282.7MPS AXVELAVG= 819.8FPS = 249.9MPS U= 872.FPS = 266.MPS												
	THETA	SEG	VEL	MN	PS	PT	TT	WBL	WBL	DF	INCIDENCE	ALPHA	AXIAL
		NO						LBM/SEC	KG/SEC		IN DEG	IN DEG VEL	REL
	60.	1	1.000	0.6572	1.0000	1.0000	1.0000	0.0	0.0	0.180	-20.28	61.9	1.000

STAGE 9
ROTOR

FLOW SWIRL= 62.99DEG PARTICLE SWIRL=115.80DEG PS AVG= 60.94PSIA = 420171.PA
PTAVG= 76.47PSIA = 530670.PA TTA VG= 910.3DEG R = 505.7DEG K VEL AVG= 840.8FPS = 256.3MPS
RVELAVG=1042.9FPS = 317.9MPS AXVELAVG= 813.1FPS = 247.8MPS U= 867.FPS = 264.MPS

THETA	SEG	VEL	MN	PS	PT	TT	WBL	WBL	DF	INCIDENCE	BETA	AXIAL	REL
	NO						LBM/SEC	KG/SEC		IN DEG	IN DEG	VEL	VEL
63.	1	1.000	0.5900	1.0000	1.0000	1.0000	0.0	0.0	0.188	-12.94	51.2	1.000	1.000

STATOR

FLOW SWIRL= 62.80DEG PARTICLE SWIRL=118.16DEG PS AVG= 69.83PSIA = 481475.PA
PTAVG= 90.08PSIA = 621068.PA TTA VG= 972.4DEG R = 540.2DEG K VEL AVG= 906.2FPS = 276.2MPS
RVELAVG= 922.7FPS = 281.2MPS AXVELAVG= 805.9FPS = 245.6MPS U= 863.FPS = 263.MPS

THETA	SEG	VEL	MN	PS	PT	TT	WBL	WBL	DF	INCIDENCE	ALPHA	AXIAL	REL
	NO						LBM/SEC	KG/SEC		IN DEG	IN DEG	VEL	VEL
63.	1	1.000	0.6177	1.0000	1.0000	1.0000	0.0	0.0	0.156	-23.20	62.8	1.000	1.000

STAGE 10
ROTOR

FLOW SWIRL= 65.55DEG PARTICLE SWIRL=120.91DEG PS AVG= 75.76PSIA = 522327.PA
PTAVG= 93.47PSIA = 644446.PA TTA VG= 972.4DEG R = 540.2DEG K VEL AVG= 825.7FPS = 251.7MPS
RVELAVG=1005.2FPS = 306.4MPS AXVELAVG= 790.4FPS = 240.9MPS U= 860.FPS = 262.MPS

THETA	SEG	VEL	MN	PS	PT	TT	WBL	WBL	DF	INCIDENCE	BETA	AXIAL	REL
	NO						LBM/SEC	KG/SEC		IN DEG	IN DEG	VEL	VEL
66.	1	1.000	0.5594	1.0000	1.0000	1.0000	0.0	0.0	0.131	-14.64	51.8	1.000	1.000

STATOR

FLOW SWIRL= 64.97DEG PARTICLE SWIRL=122.94DEG PS AVG= 86.18PSIA = 594193.PA
PTAVG=107.41PSIA = 740581.PA TTA VG=1026.9DEG R = 570.5DEG K VEL AVG= 868.2FPS = 264.6MPS
RVELAVG= 923.3FPS = 281.4MPS AXVELAVG= 785.0FPS = 239.3MPS U= 857.FPS = 261.MPS

THETA	SEG	VEL	MN	PS	PT	TT	WBL	WBL	DF	INCIDENCE	ALPHA	AXIAL	REL
	NO						LBM/SEC	KG/SEC		IN DEG	IN DEG	VEL	VEL
65.	1	1.000	0.5737	1.0000	1.0000	1.0000	0.0	0.0	0.118	-20.51	64.7	1.000	1.000

STAGE 11
ROTOR

FLOW SWIRL= 67.24DEG PARTICLE SWIRL=125.21DEG PS AVG= 90.35PSIA = 622913.PA
PTAVG=109.99PSIA = 759346.PA TTA VG=1026.9DEG R = 570.5DEG K VEL AVG= 821.9FPS = 250.5MPS
RVELAVG=1025.1FPS = 312.4MPS AXVELAVG= 795.3FPS = 242.4MPS U= 854.FPS = 260.MPS

THETA	SEG	VEL	MN	PS	PT	TT	WBL	WBL	DF	INCIDENCE	BETA	AXIAL	REL
	NO						LBM/SEC	KG/SEC		IN DEG	IN DEG	VEL	VEL
67.	1	1.000	0.5414	1.0000	1.0000	1.0000	0.0	0.0	0.115	-11.98	50.9	1.000	1.000

STATOR

FLOW SWIRL= 66.21DEG PARTICLE SWIRL=127.08DEG PS AVG=102.43PSIA = 706202.PA
PTAVG=125.08PSIA = 862398.PA TTA VG=1084.3DEG R = 602.4DEG K VEL AVG= 851.1FPS = 259.4MPS
RVELAVG= 950.3FPS = 289.7MPS AXVELAVG= 788.4FPS = 240.3MPS U= 851.FPS = 259.MPS

THETA	SEG	VEL	MN	PS	PT	TT	WBL	WBL	DF	INCIDENCE	ALPHA	AXIAL	REL
	NO						LBM/SEC	KG/SEC		IN DEG	IN DEG	VEL	VEL
66.	1	1.000	0.5463	1.0000	1.0000	1.0000	0.0	0.0	0.097	-26.57	67.9	1.000	1.000

STAGE 12
ROTOR

FLOW SWIRL= 68.28DEG PARTICLE SWIRL=129.15DEG PS AVG=107.91PSIA = 744008.PA
PTAVG=129.40PSIA = 892162.PA TTA VG=1084.3DEG R = 602.4DEG K VEL AVG= 812.3FPS = 247.6MPS
RVELAVG=1027.1FPS = 313.1MPS AXVELAVG= 789.2FPS = 240.6MPS U= 950.FPS = 259.MPS

	THETA	SEG	VEL	MN	PS	PT	TT	WBL	WBL	DF	INCIDENCE	BETA	AXIAL	REL
		NO						LBM/SEC	KG/SEG		IN DEG	IN DEG	VEL	VEL
STATOR	68.	1	1.000	0.5202	1.0000	1.0000	1.0000	0.0	0.0	0.142	-13.01	50.2	1.000	1.000
	FLOW SWIRL= 67.18DEG PARTICLE SWIRL=130.91DEG PS AVG=120.00PSIA = 827394.PA PTAVG=141.31PSIA = 974308.PA TTAVG=1120.1DEG R = 622.3DEG K VELAVG= 784.3FPS =239.0MPS RVELAVG= 917.2FPS = 279.6MPS AXVELAVG= 728.0FPS =221.9MPS U= 850.FPS = 259.MPS													
	67.	1	1.000	0.4933	1.0000	1.0000	1.0000	0.0	0.0	0.145	-23.97	68.2	1.000	1.000
STAGE 13	FLOW SWIRL= 69.01DEG PARTICLE SWIRL=132.74DEG PS AVG=124.47PSIA = 858170.PA PTAVG=142.84PSIA = 984877.PA TTAVG=1120.1DEG R = 622.3DEG K VELAVG= 721.2FPS =219.8MPS RVELAVG= 999.5FPS = 304.7MPS AXVELAVG= 706.8FPS =215.4MPS U= 850.FPS = 259.MPS													
	69.	1	1.000	0.4520	1.0000	1.0000	1.0000	0.0	0.0	0.130	-9.71	45.0	1.000	1.000
STATOR	FLOW SWIRL= 67.64DEG PARTICLE SWIRL=134.20DEG PS AVG=135.19PSIA = 932128.PA PTAVG=153.82PSIA =1060577.PA TTAVG=1139.8DEG R = 633.2DEG K VELAVG= 704.8FPS =214.8MPS RVELAVG= 903.5FPS = 275.4MPS AXVELAVG= 663.8FPS =202.3MPS U= 850.FPS = 259.MPS													
	68.	1	1.000	0.4375	1.0000	1.0000	1.0000	0.0	0.0	0.370	-28.17	70.4	1.000	1.000
EXIT	FLOW SWIRL= 69.08DEG PARTICLE SWIRL=135.64DEG PS AVG=140.96PSIA = 971887.PA PTAVG=150.70PSIA =1039045.PA TTAVG=1139.8DEG R = 633.2DEG K VELAVG= 509.2FPS =155.2MPS RVELAVG= 0.0FPS = 0.0MPS AXVELAVG= 0.0FPS = 0.0MPS U= 850.FPS = 259.MPS													
	69.	1	1.000	0.3134	1.0000	1.0000	1.0000	0.0	0.0	0.0	0.0	0.0	0.0	0.0

**DETAILED FLOW PROPERTY
CALCULATIONS WITH DISTORTED
INLET**

WCCORR=148.5LBM/SEC= 67.4KG/SEC N1CORR= 7700.RPM N2CORR= 9800.RPM N2/N1(MECH)=1.410
 THETM= 0.DEG BYPASS RATIO=1.100 MAX-MIN/AVG=0.449

FAN QD OUTPUT

CORR FLOW PRESS RATIO EFFICIENCY
 FAN QD PERFORMANCE 77.76 LBM/SEC 1.705 0.817
 35.27 KG/SEC

--- ROW OUTPUT ---

16V

FLOW SWIRL= 0.0 DEG PARTICLE SWIRL= 0.0 DEG PSAVG= 13.69PSIA = 94401.PA
 PTAVG= 14.70PSIA = 101353.PA TTAGV= 519.0DEG R = 288.3DEG K VELAVG= 353.3FPS =107.7MPS
 RVELAVG=1082.4FPS = 329.9MPS AXVELAVG= 353.3FPS =107.7MPS U=1023.FPS = 312.MPS

THETA	SEG NO	VEL	MN	PS	PT	TT	WBL LBM/SEC	WBL KG/SEC	UF	INCIDENCE IN DEG	ALPHA IN DEG	AXIAL VEL	REL VEL
0.	1	0.977	0.3117	0.7783	0.7755	1.0000	0.0	0.0	-565	0.0	90.0	0.977	0.997
20.	2	0.970	0.3096	0.7790	0.7755	1.0000	0.0	0.0	-565	0.0	90.0	0.970	0.997
40.	3	0.966	0.3082	0.7795	0.7755	1.0000	0.0	0.0	-566	0.0	90.0	0.966	0.996
60.	4	0.963	0.3072	0.7798	0.7755	1.0000	0.0	0.0	-566	0.0	90.0	0.963	0.996
80.	5	0.961	0.3065	0.7801	0.7755	1.0000	0.0	0.0	-566	0.0	90.0	0.961	0.996
100.	6	0.933	0.2975	1.2363	1.2245	1.0000	0.0	0.0	-568	0.0	90.0	0.933	0.993
120.	7	0.979	0.3126	1.2285	1.2245	1.0000	0.0	0.0	-565	0.0	90.0	0.979	0.998
140.	8	1.003	0.3204	1.2243	1.2245	1.0000	0.0	0.0	-563	0.0	90.0	1.003	1.000
160.	9	1.016	0.3247	1.2220	1.2245	1.0000	0.0	0.0	-562	0.0	90.0	1.016	1.002
180.	10	1.024	0.3270	1.2207	1.2245	1.0000	0.0	0.0	-561	0.0	90.0	1.024	1.002
200.	11	1.027	0.3283	1.2201	1.2245	1.0000	0.0	0.0	-561	0.0	90.0	1.027	1.003
220.	12	1.029	0.3290	1.2197	1.2245	1.0000	0.0	0.0	-561	0.0	90.0	1.029	1.003
240.	13	1.031	0.3293	1.2195	1.2245	1.0000	0.0	0.0	-561	0.0	90.0	1.031	1.003
260.	14	1.031	0.3295	1.2194	1.2245	1.0000	0.0	0.0	-561	0.0	90.0	1.031	1.003
280.	15	1.072	0.3430	0.7675	0.7755	1.0000	0.0	0.0	-559	0.0	90.0	1.072	1.008
300.	16	1.029	0.3297	0.7726	0.7755	1.0000	0.0	0.0	-561	0.0	90.0	1.029	1.003
320.	17	1.003	0.3202	0.7755	0.7755	1.0000	0.0	0.0	-563	0.0	90.0	1.003	1.000
340.	18	0.987	0.3150	0.7772	0.7755	1.0000	0.0	0.0	-564	0.0	90.0	0.987	0.999

STAGE 1
 ROTOR

FLOW SWIRL= 9.17DEG PARTICLE SWIRL= 9.17DEG PSAVG= 13.24PSIA = 91302.PA
 PTAVG= 14.75PSIA = 101709.PA TTAGV= 519.0DEG R = 298.3DEG K VELAVG= 434.3FPS =132.4MPS
 RVELAVG= 915.7FPS = 279.1MPS AXVELAVG= 388.7FPS =118.5MPS U=1023.FPS = 312.MPS

THETA	SEG NO	VEL	MN	PS	PT	TT	WBL LBM/SEC	WBL KG/SEC	DF	INCIDENCE IN DEG	BETA IN DEG	AXIAL VEL	REL VEL
9.	1	0.979	0.3856	0.7779	0.7737	1.0000	0.0	0.0	0.311	8.99	24.5	0.978	1.000
29.	2	0.972	0.3831	0.7783	0.7732	1.0000	0.0	0.0	0.316	9.15	24.3	0.972	1.000
49.	3	0.967	0.3814	0.7787	0.7729	1.0000	0.0	0.0	0.320	9.27	24.2	0.967	1.000
69.	4	0.964	0.3802	0.7790	0.7727	1.0000	0.0	0.0	0.323	9.35	24.2	0.964	1.000
89.	5	0.962	0.3793	0.7792	0.7725	1.0000	0.0	0.0	0.325	9.40	24.1	0.962	1.000
109.	6	0.936	0.3686	1.2338	1.2166	1.0000	0.0	0.0	0.308	10.12	23.4	0.936	1.001
129.	7	0.990	0.3867	1.2277	1.2219	1.0000	0.0	0.0	0.279	8.91	24.6	0.980	1.000
149.	8	1.003	0.3959	1.2244	1.2247	1.0000	0.0	0.0	0.259	9.30	25.2	1.003	1.000
169.	9	1.016	0.4010	1.2226	1.2262	1.0000	0.0	0.0	0.249	7.95	25.5	1.016	1.000
189.	10	1.022	0.4038	1.2216	1.2270	1.0000	0.0	0.0	0.245	7.77	25.7	1.022	1.000
209.	11	1.026	0.4053	1.2210	1.2275	1.0000	0.0	0.0	0.243	7.67	25.8	1.026	1.000
229.	12	1.028	0.4061	1.2207	1.2277	1.0000	0.0	0.0	0.241	7.62	25.9	1.028	1.000
249.	13	1.029	0.4065	1.2206	1.2278	1.0000	0.0	0.0	0.241	7.59	25.9	1.029	1.000
269.	14	1.030	0.4067	1.2205	1.2279	1.0000	0.0	0.0	0.240	7.57	25.9	1.030	1.000
289.	15	1.070	0.4231	0.7684	0.7803	1.0000	0.0	0.0	0.235	6.49	27.0	1.070	1.000
309.	16	1.027	0.4057	0.7732	0.7775	1.0000	0.0	0.0	0.265	7.64	25.9	1.027	1.000
329.	17	1.002	0.3956	0.7755	0.7756	1.0000	0.0	0.0	0.290	8.31	25.2	1.002	1.000
349.	18	0.987	0.3894	0.7769	0.7744	1.0000	0.0	0.0	0.303	8.73	24.8	0.987	1.000

STATOR

FLOW SWIRL= 8.49DEG PARTICLE SWIRL= 19.06DEG PSAVG= 16.00PSIA = 110300.PA
 PTAVG= 18.76PSIA = 129325.PA TTAUG= 566.3DEG R = 314.6DEG K VELAVG= 549.3FPS = 167.4MPS
 RVELAVG= 737.4FPS = 224.9MPS AXVELAVG= 393.2FPS = 119.8MPS U=1007.FPS = 307.MPS

THETA	SEG NO	VEL	MN	PS	PT	TT	WBL LBM/SEC	WBL KG/SEC	DF	INCIDENCE IN DEG	ALPHA IN DEG	AXIAL REL VEL
8.	1	1.001	0.4814	0.7850	0.7846	1.0016	0.0	0.0	0.459	-0.26	43.6	0.970
28.	2	1.005	0.4836	0.7834	0.7841	1.0012	0.0	0.0	0.465	0.07	43.2	0.966
48.	3	1.007	0.4649	0.7824	0.7838	1.0010	0.0	0.0	0.470	0.31	43.0	0.962
68.	4	1.009	0.4959	0.7919	0.7837	1.0008	0.0	0.0	0.473	0.49	42.8	0.960
88.	5	1.010	0.4865	0.7815	0.7836	1.0007	0.0	0.0	0.476	0.61	42.7	0.959
108.	6	1.071	0.5003	1.2553	1.2702	1.0672	0.0	0.0	0.445	-0.68	44.0	0.976
128.	7	1.025	0.4956	1.1959	1.2064	0.9954	0.0	0.0	0.414	-2.49	45.8	1.000
148.	8	1.012	0.4863	1.2032	1.2080	0.9967	0.0	0.0	0.388	-3.86	47.2	1.018
168.	9	1.002	0.4830	1.2117	1.2123	0.9981	0.0	0.0	0.378	-4.40	47.7	1.025
188.	10	0.997	0.4901	1.2165	1.2149	0.9998	0.0	0.0	0.373	-4.67	48.0	1.029
208.	11	0.994	0.4786	1.2192	1.2163	0.9992	0.0	0.0	0.370	-4.91	48.1	1.031
228.	12	0.992	0.4777	1.2206	1.2171	0.9995	0.0	0.0	0.369	-4.89	48.2	1.032
248.	13	0.991	0.4773	1.2214	1.2176	0.9996	0.0	0.0	0.368	-4.93	48.2	1.032
268.	14	0.991	0.4770	1.2218	1.2178	0.9996	0.0	0.0	0.367	-4.95	48.2	1.032
288.	15	0.944	0.4705	0.7451	0.7396	0.9304	0.0	0.0	0.369	-5.13	48.4	1.035
308.	16	0.972	0.4662	0.7949	0.7969	1.0043	0.0	0.0	0.403	-3.16	46.5	1.009
328.	17	0.984	0.4724	0.7925	0.7875	1.0035	0.0	0.0	0.434	-1.54	44.9	0.997
348.	18	0.994	0.4780	0.7878	0.7857	1.0023	0.0	0.0	0.449	-0.76	44.1	0.977

STAGE 2 ROTOR

FLOW SWIRL= 13.36DEG PARTICLE SWIRL= 23.92DEG PSAVG= 17.30PSIA = 119276.PA
 PTAVG= 19.01PSIA = 131094.PA TTAUG= 566.3DEG R = 314.6DEG K VELAVG= 423.9FPS = 129.2MPS
 RVELAVG= 973.3FPS = 296.7MPS AXVELAVG= 408.5FPS = 124.5MPS U= 997.FPS = 304.MPS

THETA	SEG NO	VEL	MN	PS	PT	TT	WBL LBM/SEC	WBL KG/SEC	DF	INCIDENCE IN DEG	BETA IN DEG	AXIAL REL VEL
13.	1	0.969	0.3563	0.7874	0.7822	1.0016	0.0	0.0	0.245	5.94	24.1	0.969
33.	2	0.965	0.3547	0.7862	0.7903	1.0012	0.0	0.0	0.249	6.05	24.0	0.965
53.	3	0.962	0.3535	0.7855	0.7792	1.0010	0.0	0.0	0.253	6.12	23.9	0.962
73.	4	0.960	0.3527	0.7851	0.7785	1.0008	0.0	0.0	0.255	6.18	23.8	0.960
93.	5	0.958	0.3521	0.7848	0.7780	1.0007	0.0	0.0	0.257	6.22	23.8	0.958
113.	6	0.982	0.3496	1.2556	1.2431	1.0672	0.0	0.0	0.183	5.62	24.4	0.982
133.	7	1.001	0.3693	1.1978	1.1975	0.9954	0.0	0.0	0.169	5.16	24.8	1.001
153.	8	1.019	0.3759	1.2026	1.2063	0.9967	0.0	0.0	0.162	4.72	25.3	1.019
173.	9	1.026	0.3783	1.2097	1.2149	0.9981	0.0	0.0	0.159	4.54	25.5	1.026
193.	10	1.030	0.3795	1.2137	1.2198	0.9988	0.0	0.0	0.158	4.46	25.5	1.030
213.	11	1.031	0.3801	1.2161	1.2225	0.9992	0.0	0.0	0.157	4.41	25.6	1.031
233.	12	1.032	0.3805	1.2173	1.2239	0.9995	0.0	0.0	0.157	4.39	25.6	1.032
253.	13	1.033	0.3806	1.2180	1.2247	0.9996	0.0	0.0	0.156	4.38	25.6	1.033
273.	14	1.033	0.3807	1.2183	1.2251	0.9996	0.0	0.0	0.156	4.37	25.6	1.033
293.	15	1.029	0.3935	0.7449	0.7541	0.9304	0.0	0.0	0.210	4.46	25.5	1.029
313.	16	1.008	0.3703	0.7940	0.7942	1.0043	0.0	0.0	0.222	4.99	25.0	1.008
333.	17	0.986	0.3622	0.7935	0.7905	1.0035	0.0	0.0	0.231	5.52	24.5	0.986
353.	18	0.976	0.3586	0.7897	0.7853	1.0023	0.0	0.0	0.239	5.78	24.2	0.976

STATOR

FLOW SWIRL= 12.08DEG PARTICLE SWIRL= 29.45DEG PSAVG= 20.40PSIA = 140665.PA
 PTAVG= 23.12PSIA = 159429.PA TTAUG= 605.7DEG R = 336.5DEG K VELAVG= 505.5FPS = 154.1MPS
 RVELAVG= 832.0FPS = 253.6MPS AXVELAVG= 422.2FPS = 128.7MPS U= 994.FPS = 303.MPS

THETA	SEG NO	VEL	MN	PS	PT	TT	WBL LBM/SEC	WBL KG/SEC	DF	INCIDENCE IN DEG	ALPHA IN DEG	AXIAL REL VEL
12.	1	1.000	0.4253	0.8006	0.7999	1.0064	0.0	0.0	0.119	-28.93	52.9	0.959
32.	2	1.002	0.4262	0.7990	0.7987	1.0062	0.0	0.0	0.128	-28.55	52.6	0.955
52.	3	1.004	0.4268	0.7982	0.7981	1.0062	0.0	0.0	0.134	-28.27	52.3	0.952
72.	4	1.005	0.4272	0.7977	0.7979	1.0063	0.0	0.0	0.139	-28.06	52.1	0.950
92.	5	1.005	0.4276	0.7973	0.7976	1.0063	0.0	0.0	0.142	-27.92	51.9	0.948
112.	6	1.026	0.4209	1.2306	1.2262	1.0802	0.0	0.0	-0.000	-34.22	58.2	1.016
132.	7	1.028	0.4356	1.1883	1.1944	1.0141	0.0	0.0	-0.030	-35.53	59.5	1.029
152.	8	1.008	0.4315	1.1833	1.1865	0.9935	0.0	0.0	-0.044	-36.11	60.1	1.036
172.	9	1.002	0.4288	1.1953	1.1967	0.9945	0.0	0.0	-0.051	-36.40	60.4	1.039
192.	10	1.000	0.4277	1.2018	1.2023	0.9948	0.0	0.0	-0.054	-36.54	60.5	1.040
212.	11	0.999	0.4272	1.2053	1.2055	0.9950	0.0	0.0	-0.056	-36.60	60.6	1.041
232.	12	0.998	0.4269	1.2072	1.2072	0.9951	0.0	0.0	-0.057	-36.64	60.6	1.041
252.	13	0.998	0.4268	1.2082	1.2081	0.9952	0.0	0.0	-0.057	-36.66	60.7	1.041
272.	14	0.998	0.4267	1.2088	1.2086	0.9952	0.0	0.0	-0.057	-36.67	60.7	1.041
292.	15	0.969	0.4339	0.7583	0.7614	0.9086	0.0	0.0	0.046	-32.06	56.1	0.993
312.	16	0.970	0.4160	0.8056	0.8006	0.9875	0.0	0.0	0.072	-31.00	55.0	0.981
332.	17	0.990	0.4203	0.8109	0.8079	1.0091	0.0	0.0	0.092	-30.13	54.1	0.972
352.	18	0.997	0.4236	0.8039	0.8024	1.0068	0.0	0.0	0.107	-29.45	53.4	0.965

STAGE 3
ROTLR

FLOW SWIRL= 17.320DEG PARTICLE SWIRL= 34.69DEG PSAVG= 20.04PSIA = 138178.PA
PTAVG= 22.97PSIA = 156395.PA TTAVG= 605.70DEG R = 336.50DEG K VELAVG= 522.7FPS = 159.3MPS
RVELAVG= 929.1FPS = 292.9MPS AXVELAVG= 496.4FPS = 149.2MPS U= 982.FPS = 299.MPS

THETA	SEG NO	VEL	MN	PS	PT	TT	WBL LBM/SEC	WBL KG/SEC	DF	INCIDENCE IN DEG	BETA IN DEG	AXIAL VEL	REL VEL
17.	1	0.948	0.4163	0.8154	0.8014	1.0064	0.0	0.0	-0.050	-5.75	29.9	0.948	0.995
37.	2	0.943	0.4142	0.9148	0.7999	1.0062	0.0	0.0	-0.046	-5.60	29.8	0.943	0.995
57.	3	0.939	0.4126	0.8148	0.7991	1.0062	0.0	0.0	-0.043	-5.48	29.7	0.939	0.994
77.	4	0.937	0.4114	0.8149	0.7987	1.0063	0.0	0.0	-0.040	-5.39	29.6	0.937	0.994
97.	5	0.935	0.4105	0.8150	0.7983	1.0063	0.0	0.0	-0.039	-5.34	29.5	0.935	0.994
117.	6	1.017	0.4322	1.2317	1.2214	1.0802	0.0	0.0	-0.442	-7.97	32.2	1.017	1.001
137.	7	1.037	0.4551	1.1816	1.1880	1.0141	0.0	0.0	-0.396	-8.58	32.8	1.037	1.003
157.	8	1.045	0.4641	1.1709	1.1939	0.9935	0.0	0.0	-0.381	-8.86	33.1	1.045	1.004
177.	9	1.050	0.4659	1.1806	1.1949	0.9945	0.0	0.0	-0.395	-9.99	33.2	1.050	1.005
197.	10	1.052	0.4668	1.1859	1.2010	0.9948	0.0	0.0	-0.388	-9.06	33.3	1.052	1.005
217.	11	1.053	0.4671	1.1890	1.2044	0.9950	0.0	0.0	-0.390	-9.09	33.3	1.053	1.005
237.	12	1.053	0.4674	1.1906	1.2062	0.9951	0.0	0.0	-0.391	-9.10	33.3	1.053	1.005
257.	13	1.054	0.4675	1.1914	1.2071	0.9952	0.0	0.0	-0.392	-9.11	33.3	1.054	1.005
277.	14	1.054	0.4675	1.1919	1.2077	0.9952	0.0	0.0	-0.392	-9.12	33.3	1.054	1.005
297.	15	0.990	0.4594	0.7602	0.7665	0.9086	0.0	0.0	-0.003	-7.11	31.3	0.990	0.999
317.	16	0.975	0.4330	0.8125	0.8062	0.9875	0.0	0.0	-0.050	-6.62	30.8	0.975	0.997
337.	17	0.964	0.4232	0.8217	0.8107	1.0081	0.0	0.0	-0.063	-6.25	30.5	0.964	0.996
357.	18	0.954	0.4193	0.8172	0.8045	1.0068	0.0	0.0	-0.056	-5.96	30.2	0.954	0.995

STATOR

FLOW SWIRL= 13.96DEG PARTICLE SWIRL= 35.68DEG PSAVG= 21.06PSIA = 145222.PA
PTAVG= 24.99PSIA = 172290.PA TTAVG= 623.70DEG R = 346.50DEG K VELAVG= 597.5FPS = 179.1MPS
RVELAVG= 1079.8FPS = 329.1MPS AXVELAVG= 577.0FPS = 175.9MPS U= 975.FPS = 297.MPS

THETA	SEG NO	VEL	MN	PS	PT	TT	WBL LBM/SEC	WBL KG/SEC	DF	INCIDENCE IN DEG	ALPHA IN DEG	AXIAL VEL	REL VEL
14.	1	0.914	0.4413	0.9949	0.8622	1.0259	0.0	0.0	-0.526	-20.63	72.6	0.892	0.892
34.	2	0.914	0.4412	0.8926	0.8598	1.0265	0.0	0.0	-0.518	-20.37	72.4	0.890	0.890
54.	3	0.914	0.4409	0.8916	0.8588	1.0272	0.0	0.0	-0.510	-20.13	72.1	0.888	0.888
74.	4	0.914	0.4408	0.8908	0.8580	1.0277	0.0	0.0	-0.505	-19.98	72.0	0.886	0.886
94.	5	0.914	0.4408	0.8901	0.8572	1.0280	0.0	0.0	-0.502	-19.90	71.9	0.885	0.885
114.	6	1.123	0.5358	1.0974	1.1140	1.0705	0.0	0.0	-1.213	-43.70	95.7	1.140	1.140
134.	7	1.092	0.5364	1.0992	1.1267	1.0102	0.0	0.0	-1.205	-41.57	93.6	1.112	1.112
154.	8	1.083	0.5399	1.0994	1.1298	0.9813	0.0	0.0	-1.190	-40.85	92.8	1.103	1.103
174.	9	1.087	0.5428	1.1041	1.1370	0.9767	0.0	0.0	-1.197	-41.03	93.0	1.105	1.105
194.	10	1.089	0.5446	1.1073	1.1417	0.9759	0.0	0.0	-1.205	-41.23	93.2	1.108	1.108
214.	11	1.091	0.5453	1.1095	1.1446	0.9755	0.0	0.0	-1.206	-41.30	93.3	1.109	1.109
234.	12	1.092	0.5459	1.1102	1.1459	0.9753	0.0	0.0	-1.209	-41.36	93.4	1.110	1.110
254.	13	1.092	0.5462	1.1106	1.1465	0.9751	0.0	0.0	-1.211	-41.40	93.4	1.110	1.110
274.	14	1.092	0.5463	1.1110	1.1470	0.9751	0.0	0.0	-1.211	-41.41	93.4	1.110	1.110
294.	15	0.863	0.4409	0.8967	0.8638	0.9147	0.0	0.0	-0.443	-17.36	69.4	0.863	0.863
314.	16	0.900	0.4428	0.9032	0.8710	0.9889	0.0	0.0	-0.537	-20.67	72.7	0.892	0.892
334.	17	0.914	0.4424	0.9028	0.8703	1.0204	0.0	0.0	-0.558	-21.56	73.6	0.900	0.900
354.	18	0.914	0.4418	0.8985	0.8658	1.0251	0.0	0.0	-0.541	-21.07	73.1	0.896	0.896

EXIT

FLOW SWIRL= 25.04DEG PARTICLE SWIRL= 46.86DEG PSAVG= 16.96PSIA = 116948.PA
PTAVG= 25.06PSIA = 172805.PA TTAVG= 623.70DEG R = 346.50DEG K VELAVG= 859.1FPS = 261.8MPS
RVELAVG= 0.0FPS = 0.0MPS AXVELAVG= 0.0FPS = 0.0MPS U= 975.FPS = 297.MPS

THETA	SEG NO	VEL	MN	PS	PT	TT	WBL LBM/SEC	WBL KG/SEC	DF	INCIDENCE IN DEG	AXIAL VEL	REL VEL
25.	1	0.820	0.5878	0.9997	0.8546	1.0259	0.0	0.0	0.0	0.0	0.0	0.0
45.	2	0.817	0.5850	0.9991	0.8522	1.0265	0.0	0.0	0.0	0.0	0.0	0.0
65.	3	0.814	0.5826	0.9997	0.8512	1.0272	0.0	0.0	0.0	0.0	0.0	0.0
85.	4	0.812	0.5810	0.9999	0.8503	1.0277	0.0	0.0	0.0	0.0	0.0	0.0
105.	5	0.811	0.5801	0.9997	0.8495	1.0280	0.0	0.0	0.0	0.0	0.0	0.0
125.	6	1.202	0.8757	1.0001	1.1145	1.0705	0.0	0.0	0.0	0.0	0.0	0.0
145.	7	1.181	0.8870	1.0002	1.1284	1.0102	0.0	0.0	0.0	0.0	0.0	0.0
165.	8	1.170	0.8923	1.0002	1.1351	0.9813	0.0	0.0	0.0	0.0	0.0	0.0
185.	9	1.176	0.8998	1.0000	1.1441	0.9767	0.0	0.0	0.0	0.0	0.0	0.0
205.	10	1.191	0.9049	0.9996	1.1499	0.9759	0.0	0.0	0.0	0.0	0.0	0.0
225.	11	1.183	0.9066	1.0005	1.1531	0.9755	0.0	0.0	0.0	0.0	0.0	0.0
245.	12	1.185	0.9082	1.0000	1.1547	0.9753	0.0	0.0	0.0	0.0	0.0	0.0
265.	13	1.186	0.9092	0.9997	1.1555	0.9751	0.0	0.0	0.0	0.0	0.0	0.0
285.	14	1.186	0.9094	1.0000	1.1561	0.9751	0.0	0.0	0.0	0.0	0.0	0.0
305.	15	0.792	0.6017	1.0001	0.8645	0.9147	0.0	0.0	0.0	0.0	0.0	0.0
325.	16	0.825	0.6029	1.0004	0.8654	0.9889	0.0	0.0	0.0	0.0	0.0	0.0
345.	17	0.833	0.5988	1.0007	0.8629	1.0204	0.0	0.0	0.0	0.0	0.0	0.0
5.	18	0.826	0.5922	1.0004	0.8582	1.0251	0.0	0.0	0.0	0.0	0.0	0.0

CORE ENGINE OUTPUT

	CORR FLOW	PRESS RATIO	EFFICIENCY
LOW SPOOL PERFORMANCE	65.21 LBM/SEC 29.58 KG/SEC	1.754	0.765
RAKE CORRECTED PRESSURE RATIO		1.754	
HIGH SPOOL PERFORMANCE	41.21 LBM/SEC 18.69 KG/SEC	5.240	0.768

--- ROW OUTPUT ---

10.0

FLOW SWIRL= 0.0 DEG PARTICLE SWIRL= 0.0 DEG PSAVG= 13.83PSIA = 95374.PA
PTAVG= 14.70PSIA = 101353.PA TTAvg= 519.0DEG R = 288.3DEG K VELAVG= 325.3FPS = 99.1MPS
RVELAVG= 738.0FPS = 225.0MPS AXVELAVG= 325.3FPS = 99.1MPS U= 661.FPS = 202.MPS

THETA	SEG NO	VEL	MN	PS	PT	TT	WBL LBM/SEC	WBL KG/SEC	DF	INCIDENCE IN DEG	ALPHA IN DEG	AXIAL VEL	REL VEL
0.	1	1.001	0.2939	0.7762	0.7755	1.0000	0.0	0.0	-298	0.0	90.0	1.001	0.999
20.	2	0.969	0.2842	0.7792	0.7755	1.0000	0.0	0.0	-299	0.0	90.0	0.969	0.992
40.	3	0.935	0.2742	0.7821	0.7755	1.0000	0.0	0.0	-300	0.0	90.0	0.935	0.986
60.	4	0.888	0.2601	0.7862	0.7755	1.0000	0.0	0.0	-302	0.0	90.0	0.888	0.978
80.	5	0.765	0.2238	0.7958	0.7755	1.0000	0.0	0.0	-307	0.0	90.0	0.765	0.957
100.	6	0.688	0.2010	1.2650	1.2245	1.0000	0.0	0.0	-311	0.0	90.0	0.688	0.946
120.	7	0.789	0.2309	1.2537	1.2245	1.0000	0.0	0.0	-306	0.0	90.0	0.789	0.961
140.	8	0.914	0.2679	1.2379	1.2245	1.0000	0.0	0.0	-301	0.0	90.0	0.914	0.982
160.	9	1.011	0.2968	1.2240	1.2245	1.0000	0.0	0.0	-297	0.0	90.0	1.011	1.001
180.	10	1.072	0.3150	1.2147	1.2245	1.0000	0.0	0.0	-295	0.0	90.0	1.072	1.013
200.	11	1.102	0.3241	1.2099	1.2245	1.0000	0.0	0.0	-295	0.0	90.0	1.102	1.019
220.	12	1.115	0.3279	1.2078	1.2245	1.0000	0.0	0.0	-294	0.0	90.0	1.115	1.022
240.	13	1.118	0.3290	1.2072	1.2245	1.0000	0.0	0.0	-294	0.0	90.0	1.118	1.022
260.	14	1.119	0.3291	1.2072	1.2245	1.0000	0.0	0.0	-294	0.0	90.0	1.119	1.023
280.	15	1.232	0.3634	0.7522	0.7755	1.0000	0.0	0.0	-295	0.0	90.0	1.232	1.048
300.	16	1.153	0.3394	0.7609	0.7755	1.0000	0.0	0.0	-294	0.0	90.0	1.153	1.030
320.	17	1.090	0.3205	0.7675	0.7755	1.0000	0.0	0.0	-295	0.0	90.0	1.090	1.016
340.	18	1.040	0.3055	0.7724	0.7755	1.0000	0.0	0.0	-296	0.0	90.0	1.040	1.006

STAGE 1
MOTOR

FLOW SWIRL= 12.06DEG PARTICLE SWIRL= 12.06DEG PSAVG= 13.43PSIA = 92576.PA
PTAVG= 14.57PSIA = 100458.PA TTAvg= 519.0DEG R = 288.3DEG K VELAVG= 376.4FPS = 114.7MPS
RVELAVG= 678.1FPS = 206.7MPS AXVELAVG= 358.0FPS = 109.1MPS U= 690.FPS = 210.MPS

THETA	SEG NO	VEL	MN	PS	PT	TT	WBL LBM/SEC	WBL KG/SEC	DF	INCIDENCE IN DEG	BETA IN DEG	AXIAL VEL	REL VEL
12.	1	1.001	0.3409	0.7768	0.7758	1.0000	0.0	0.0	0.490	12.11	32.0	1.001	0.997
32.	2	0.969	0.3300	0.7793	0.7745	1.0000	0.0	0.0	0.510	13.08	31.0	0.969	0.993
52.	3	0.937	0.3167	0.7818	0.7731	1.0000	0.0	0.0	0.534	14.10	30.0	0.937	0.989
72.	4	0.890	0.3026	0.7952	0.7711	1.0000	0.0	0.0	0.568	15.57	28.5	0.890	0.984
92.	5	0.771	0.2614	0.7923	0.7657	1.0000	0.0	0.0	0.659	19.41	24.7	0.771	0.974
112.	6	0.695	0.2353	1.2566	1.2036	1.0000	0.0	0.0	0.646	21.89	22.2	0.695	0.970
132.	7	0.794	0.2695	1.2491	1.2107	1.0000	0.0	0.0	0.614	18.65	25.5	0.794	0.976
152.	8	0.916	0.3115	1.2369	1.2192	1.0000	0.0	0.0	0.537	14.76	29.3	0.916	0.987
172.	9	1.011	0.3444	1.2251	1.2256	1.0000	0.0	0.0	0.477	11.81	32.3	1.011	0.999
192.	10	1.070	0.3650	1.2168	1.2295	1.0000	0.0	0.0	0.441	10.00	34.1	1.070	1.007
212.	11	1.099	0.3754	1.2124	1.2315	1.0000	0.0	0.0	0.423	9.10	35.0	1.099	1.012
232.	12	1.112	0.3797	1.2105	1.2324	1.0000	0.0	0.0	0.416	8.73	35.4	1.112	1.014
252.	13	1.115	0.3810	1.2100	1.2326	1.0000	0.0	0.0	0.413	8.63	35.5	1.115	1.014
272.	14	1.115	0.3811	1.2099	1.2326	1.0000	0.0	0.0	0.412	8.62	35.5	1.115	1.015
292.	15	1.229	0.4213	0.7524	0.7835	1.0000	0.0	0.0	0.389	5.28	38.6	1.229	1.035
312.	16	1.149	0.3930	0.7625	0.7817	1.0000	0.0	0.0	0.399	7.61	36.5	1.149	1.020
332.	17	1.087	0.3713	0.7690	0.7795	1.0000	0.0	0.0	0.437	9.46	34.6	1.087	1.010
352.	18	1.039	0.3543	0.7734	0.7774	1.0000	0.0	0.0	0.466	10.93	33.2	1.039	1.003

STATOR

FLOW SWIRL= 12.51DEG PARTICLE SWIRL= 30.45DEG PSAVG= 14.96PSIA = 103167.PA
PTAVG= 19.37PSIA = 126666.PA TTAvg= 557.3DEG R = 309.6DEG K VELAVG= 615.5FPS = 167.6MPS
RVELAVG= 440.8FPS = 134.4MPS AXVELAVG= 377.0FPS = 114.9MPS U= 710.FPS = 216.MPS

THETA	SEG NO	VEL	MN	PS	PT	TT	WBL LBM/SEC	WBL KG/SEC	DF	INCIDENCE IN DEG	ALPHA IN DEG	AXIAL VEL	REL VEL
13.	1	0.984	0.5376	0.7865	0.7799	1.0022	0.0	0.0	0.569	6.58	38.0	0.997	0.997
33.	2	0.984	0.5382	0.7930	0.7767	0.9998	0.0	0.0	0.589	7.74	36.8	0.969	0.969
53.	3	0.981	0.5378	0.7811	0.7746	0.9958	0.0	0.0	0.611	9.05	35.5	0.937	0.937
73.	4	0.977	0.5360	0.7796	0.7721	0.9921	0.0	0.0	0.644	10.94	33.6	0.892	0.892
93.	5	0.960	0.5290	0.7750	0.7638	0.9837	0.0	0.0	0.731	15.85	28.7	0.774	0.774
113.	6	1.084	0.5696	1.1891	1.2068	1.0914	0.0	0.0	0.707	15.04	29.5	0.793	0.793
133.	7	1.021	0.5631	1.1718	1.1837	0.9881	0.0	0.0	0.685	13.42	31.1	0.832	0.832
153.	8	1.016	0.5616	1.1938	1.2047	0.9927	0.0	0.0	0.614	9.25	35.3	0.933	0.933
173.	9	1.016	0.5587	1.2164	1.2247	0.9927	0.0	0.0	0.556	5.86	38.7	1.015	1.015
193.	10	1.013	0.5552	1.2297	1.2349	0.9997	0.0	0.0	0.521	3.77	40.8	1.066	1.066
213.	11	1.010	0.5521	1.2369	1.2394	1.0039	0.0	0.0	0.504	2.74	41.8	1.092	1.092
233.	12	1.008	0.5500	1.2402	1.2407	1.0060	0.0	0.0	0.497	2.30	42.3	1.103	1.103
253.	13	1.006	0.5488	1.2407	1.2402	1.0070	0.0	0.0	0.494	2.13	42.4	1.107	1.107
273.	14	1.005	0.5484	1.2399	1.2390	1.0073	0.0	0.0	0.494	2.09	42.5	1.109	1.109
293.	15	0.966	0.5522	0.7495	0.7511	0.9172	0.0	0.0	0.476	0.40	44.1	1.150	1.150
313.	16	0.996	0.5407	0.7981	0.7932	1.0143	0.0	0.0	0.480	1.25	43.3	1.129	1.129
333.	17	0.987	0.5369	0.7970	0.7899	1.0107	0.0	0.0	0.518	3.53	41.0	1.072	1.072
353.	18	0.985	0.5370	0.7919	0.7848	1.0064	0.0	0.0	0.546	5.23	39.3	1.030	1.030

STAGE 2
ROTOR

FLOW SWIRL= 16.69DEG PARTICLE SWIRL= 34.63DEG PS AVG= 16.73PSIA = 115350.PA
PTAVG= 18.13PSIA = 125018.PA TTAVG= 557.30DEG R = 309.60DEG K VELAVG= 386.3FPS = 117.7MPS
RVELAVG= 796.5FPS = 242.8MPS AXVELAVG= 385.1FPS = 117.4MPS U= 726.FPS = 221.MPS

THETA	SEG NO	VEL	MN	PS	PT	TT	WBL LBM/SEC	WBL KG/SEC	DF	INCIDENCE IN DEG	BETA IN DEG	AXIAL VEL	REL VEL
17.	1	0.997	0.3359	0.7868	0.7849	1.0022	0.0	0.0	0.474	4.33	28.9	0.997	0.998
37.	2	0.969	0.3269	0.7837	0.7787	0.9988	0.0	0.0	0.492	5.04	28.2	0.969	0.993
57.	3	0.938	0.3168	0.7822	0.7737	0.9958	0.0	0.0	0.514	5.83	27.4	0.938	0.987
77.	4	0.894	0.3020	0.7810	0.7677	0.9921	0.0	0.0	0.548	7.00	26.2	0.894	0.979
97.	5	0.778	0.2635	0.7764	0.7519	0.9937	0.0	0.0	0.637	10.11	23.1	0.778	0.959
117.	6	0.811	0.2610	1.1787	1.1402	1.0914	0.0	0.0	0.582	9.20	24.0	0.811	0.965
137.	7	0.838	0.2836	1.1745	1.1460	0.9881	0.0	0.0	0.537	8.47	24.7	0.838	0.969
157.	8	0.935	0.3178	1.1973	1.1849	0.9827	0.0	0.0	0.491	5.92	27.3	0.935	0.986
177.	9	1.015	0.3439	1.2180	1.2197	0.9927	0.0	0.0	0.438	3.86	29.3	1.015	1.002
197.	10	1.065	0.3600	1.2299	1.2411	0.9997	0.0	0.0	0.409	2.62	30.6	1.065	1.012
217.	11	1.090	0.3678	1.2361	1.2523	1.0039	0.0	0.0	0.397	2.01	31.2	1.090	1.018
237.	12	1.101	0.3711	1.2388	1.2571	1.0060	0.0	0.0	0.394	1.75	31.4	1.101	1.020
257.	13	1.105	0.3723	1.2390	1.2581	1.0070	0.0	0.0	0.393	1.65	31.5	1.105	1.021
277.	14	1.106	0.3727	1.2381	1.2574	1.0073	0.0	0.0	0.393	1.62	31.6	1.106	1.021
297.	15	1.133	0.4008	0.7557	0.7790	0.9172	0.0	0.0	0.401	0.98	32.2	1.133	1.027
317.	16	1.126	0.3783	0.7960	0.8107	1.0143	0.0	0.0	0.407	1.14	32.1	1.126	1.026
337.	17	1.070	0.3596	0.7961	0.8032	1.0107	0.0	0.0	0.429	2.51	30.7	1.070	1.013
357.	18	1.029	0.3463	0.7916	0.7936	1.0064	0.0	0.0	0.454	3.52	29.7	1.029	1.005

STATOR

FLOW SWIRL= 16.39DEG PARTICLE SWIRL= 45.01DEG PS AVG= 19.87PSIA = 136970.PA
PTAVG= 23.53PSIA = 162251.PA TTAVG= 606.4DEG R = 336.90DEG K VELAVG= 585.5FPS = 178.4MPS
RVELAVG= 517.0FPS = 157.6MPS AXVELAVG= 395.4FPS = 120.5MPS U= 760.FPS = 232.MPS

THETA	SEG NO	VEL	MN	PS	PT	TT	WBL LBM/SEC	WBL KG/SEC	DF	INCIDENCE IN DEG	ALPHA IN DEG	AXIAL VEL	REL VEL
16.	1	0.986	0.4882	0.8004	0.7952	1.0042	0.0	0.0	0.416	-9.32	42.1	0.986	0.986
36.	2	0.986	0.4894	0.7964	0.7919	1.0010	0.0	0.0	0.446	-7.92	40.7	0.959	0.959
56.	3	0.986	0.4899	0.7958	0.7916	0.9988	0.0	0.0	0.481	-6.28	39.1	0.926	0.926
76.	4	0.985	0.4899	0.7981	0.7938	0.9970	0.0	0.0	0.532	-3.84	36.6	0.878	0.878
96.	5	0.986	0.4906	0.8065	0.8025	0.9956	0.0	0.0	0.651	2.41	30.4	0.754	0.754
116.	6	1.007	0.4789	1.1516	1.1371	1.0890	0.0	0.0	0.574	-1.23	34.0	0.827	0.827
136.	7	1.064	0.5172	1.1723	1.1874	1.0500	0.0	0.0	0.514	-4.27	37.1	0.887	0.887
156.	8	1.021	0.5119	1.1705	1.1815	0.9949	0.0	0.0	0.448	-7.84	40.6	0.957	0.957
176.	9	1.015	0.5085	1.1870	1.1954	0.9851	0.0	0.0	0.362	-11.97	44.7	1.036	1.036
196.	10	1.012	0.5049	1.2077	1.2133	0.9932	0.0	0.0	0.312	-14.23	47.0	1.083	1.083
216.	11	1.008	0.5014	1.2243	1.2271	0.9988	0.0	0.0	0.291	-15.20	48.0	1.102	1.102
236.	12	1.005	0.4990	1.2342	1.2349	1.0020	0.0	0.0	0.284	-15.52	48.3	1.109	1.109
256.	13	1.004	0.4978	1.2381	1.2379	1.0035	0.0	0.0	0.282	-15.60	48.4	1.110	1.110
276.	14	1.003	0.4973	1.2399	1.2392	1.0041	0.0	0.0	0.282	-15.62	48.4	1.111	1.111
296.	15	0.990	0.5201	0.7637	0.7754	0.8971	0.0	0.0	0.290	-15.33	48.1	1.105	1.105
316.	16	0.971	0.4880	0.7948	0.7896	0.9751	0.0	0.0	0.300	-14.85	47.7	1.095	1.095
336.	17	0.985	0.4858	0.8127	0.8062	1.0124	0.0	0.0	0.338	-12.97	45.8	1.058	1.058
356.	18	0.984	0.4866	0.8070	0.8009	1.0083	0.0	0.0	0.382	-10.91	43.7	1.017	1.017

STAGE 3
ROTOR

FLOW SWIRL= 21.09DEG PARTICLE SWIRL= 49.71DEG PS AVG= 21.02PSIA = 144916.PA
PTAVG= 23.24PSIA = 160254.PA TTAVG= 606.4DEG R = 336.90DEG K VELAVG= 447.9FPS = 136.5MPS
RVELAVG= 792.2FPS = 241.5MPS AXVELAVG= 433.2FPS = 132.1MPS U= 775.FPS = 236.MPS

THETA	SEG NO	VEL	MN	PS	PT	TT	WBL LBM/SEC	WBL KG/SEC	DF	INCIDENCE IN DEG	BETA IN DEG	AXIAL VEL	REL VEL
21.	1	0.979	0.3674	0.8066	0.8006	1.0042	0.0	0.0	0.355	0.02	32.6	0.979	0.994
41.	2	0.948	0.3562	0.8068	0.7964	1.0010	0.0	0.0	0.382	0.97	31.6	0.948	0.989
61.	3	0.913	0.3429	0.8110	0.7955	0.9988	0.0	0.0	0.416	2.09	30.5	0.913	0.984
81.	4	0.863	0.3239	0.8183	0.7957	0.9970	0.0	0.0	0.467	3.70	28.9	0.863	0.976
101.	5	0.752	0.2919	0.9192	0.7828	0.9956	0.0	0.0	0.586	7.31	25.3	0.752	0.963
121.	6	0.826	0.2967	1.1621	1.1168	1.0890	0.0	0.0	0.449	4.90	27.7	0.826	0.971
141.	7	0.882	0.3228	1.1918	1.1584	1.0500	0.0	0.0	0.372	3.08	29.5	0.882	0.979
161.	8	0.946	0.3581	1.1906	1.1764	0.9849	0.0	0.0	0.301	1.05	31.5	0.946	0.989
181.	9	1.035	0.3928	1.1882	1.1950	0.9851	0.0	0.0	0.220	-1.70	34.3	1.035	1.005
201.	10	1.069	0.4124	1.1963	1.2161	0.9932	0.0	0.0	0.174	-3.33	35.9	1.089	1.015
221.	11	1.112	0.4202	1.2069	1.2322	0.9998	0.0	0.0	0.157	-4.01	36.6	1.112	1.020
241.	12	1.120	0.4225	1.2142	1.2413	1.0020	0.0	0.0	0.152	-4.24	36.8	1.120	1.022
261.	13	1.122	0.4229	1.2174	1.2449	1.0035	0.0	0.0	0.150	-4.30	36.9	1.122	1.022
281.	14	1.123	0.4230	1.2179	1.2455	1.0041	0.0	0.0	0.149	-4.31	36.9	1.123	1.022
301.	15	1.113	0.4442	0.7541	0.7809	0.8971	0.0	0.0	0.187	-4.03	36.6	1.113	1.020
321.	16	1.102	0.4213	0.7838	0.8008	0.9751	0.0	0.0	0.221	-3.71	36.3	1.102	1.018
341.	17	1.061	0.3974	0.9070	0.9136	1.0124	0.0	0.0	0.277	-2.49	35.1	1.061	1.010
1.	18	1.015	0.3803	0.8079	0.8072	1.0083	0.0	0.0	0.322	-1.07	33.7	1.015	1.001

STATOR

FLOW SWIRL= 24.39DEG PARTICLE SWIRL= 61.85DEG PSAVG= 22.60PSIA = 155828.PA
 PTAVG= 26.25PSIA = 180981.PA TTAVG= 637.2DEG R = 354.0DEG K VELAVG= 568.2FPS =173.2MPS
 RVELAVG= 650.5FPS = 198.3MPS AXVELAVG= 446.9FPS =136.7MPS U= 791.FPS = 241.MPS

THETA	SEG NO	VEL	MN	PS	PT	TT	WBL LBM/SEC	WBL KG/SEC	DF	INCIDENCE IN DEG	ALPHA IN DEG	AXIAL VEL	REL VEL
24.	1	1.022	0.4769	0.8402	0.8451	1.0118	-0.135	-0.061	0.284	-1.67	53.7	0.987	0.987
44.	2	1.017	0.4748	0.8429	0.8467	1.0118	-0.127	-0.057	0.339	0.68	51.3	0.953	0.953
64.	3	1.016	0.4735	0.8515	0.8546	1.0142	-0.118	-0.054	0.400	3.23	48.8	0.915	0.915
84.	4	1.014	0.4718	0.8659	0.8681	1.0185	-0.106	-0.049	0.499	6.89	45.1	0.862	0.862
104.	5	1.010	0.4676	0.8845	0.8845	1.0268	-0.085	-0.039	0.683	15.31	36.7	0.738	0.738
124.	6	0.946	0.4216	1.1612	1.1295	1.1017	0.127	0.058	0.597	11.34	40.7	0.797	0.797
144.	7	0.969	0.4363	1.1912	1.1685	1.0812	0.134	0.061	0.476	6.21	45.8	0.872	0.872
164.	8	0.994	0.4574	1.1900	1.1924	1.0181	0.125	0.057	0.356	1.36	50.6	0.943	0.943
184.	9	0.991	0.4706	1.1481	1.1504	0.9765	0.115	0.052	0.210	-4.79	56.9	1.034	1.034
204.	10	0.990	0.4703	1.1561	1.1581	0.9762	0.120	0.054	0.134	-7.84	59.8	1.080	1.080
224.	11	0.983	0.4656	1.1728	1.1714	0.9813	0.126	0.057	0.107	-8.90	60.9	1.097	1.097
244.	12	0.978	0.4623	1.1840	1.1801	0.9849	0.130	0.059	0.099	-9.18	61.2	1.101	1.101
264.	13	0.976	0.4607	1.1883	1.1832	0.9868	0.133	0.060	0.098	-9.25	61.2	1.102	1.102
284.	14	0.975	0.4601	1.1896	1.1931	0.9976	0.136	0.061	0.097	-9.27	61.3	1.102	1.102
304.	15	1.055	0.5323	0.7169	0.7508	0.8748	-0.161	-0.073	-0.025	-14.14	66.1	1.190	1.190
324.	16	1.033	0.5013	0.7592	0.7760	0.9390	-0.155	-0.070	0.034	-11.64	63.6	1.140	1.140
344.	17	1.019	0.4795	0.8182	0.8243	0.9964	-0.139	-0.063	0.143	-7.49	59.5	1.075	1.075
4.	18	1.020	0.4762	0.8385	0.8430	1.0123	-0.134	-0.061	0.226	-4.10	56.1	1.023	1.023

STATOR

FLOW SWIRL= 41.350DEG PARTICLE SWIRL= 78.81DEG PSAVG= 22.99PSIA = 158498.PA
 PTAVG= 25.78PSIA = 177731.PA TTAVG= 637.2DEG R = 354.0DEG K VELAVG= 490.6FPS =149.5MPS
 RVELAVG= 911.9FPS = 277.9MPS AXVELAVG= 447.8FPS =136.5MPS U= 992.FPS = 302.MPS

THETA	SEG NO	VEL	MN	PS	PT	TT	WBL LBM/SEC	WBL KG/SEC	DF	INCIDENCE IN DEG	ALPHA IN DEG	AXIAL VEL	REL VEL
41.	1	0.979	0.3917	0.8493	0.8418	1.0118	0.0	0.0	-0.078	12.80	65.9	0.979	0.997
61.	2	0.946	0.3784	0.8530	0.8395	1.0118	0.0	0.0	-0.077	12.80	65.9	0.946	0.996
81.	3	0.911	0.3635	0.8601	0.8402	1.0142	0.0	0.0	-0.077	12.80	65.9	0.911	0.995
101.	4	0.862	0.3429	0.8697	0.8412	1.0185	0.0	0.0	-0.079	12.80	65.9	0.862	0.994
121.	5	0.761	0.3067	0.8653	0.8216	1.0268	0.0	0.0	-0.081	12.80	65.9	0.761	0.994
141.	6	0.903	0.3064	1.1589	1.1028	1.1017	0.0	0.0	-0.091	12.80	65.9	0.803	0.994
161.	7	0.867	0.3345	1.2007	1.1569	1.0912	0.0	0.0	-0.099	12.80	65.9	0.867	0.994
181.	8	0.936	0.3729	1.2043	1.1820	1.0181	0.0	0.0	-0.078	12.80	65.9	0.936	0.995
201.	9	1.025	0.4182	1.1553	1.1619	0.9765	0.0	0.0	-0.073	12.80	65.9	1.025	0.999
221.	10	1.077	0.4404	1.1548	1.1764	0.9762	0.0	0.0	-0.076	12.80	65.9	1.077	1.003
241.	11	1.096	0.4473	1.1676	1.1944	0.9813	0.0	0.0	-0.080	12.80	65.9	1.096	1.004
261.	12	1.101	0.4497	1.1773	1.2052	0.9849	0.0	0.0	-0.082	12.80	65.9	1.101	1.004
281.	13	1.102	0.4488	1.1810	1.2092	0.9969	0.0	0.0	-0.082	12.80	65.9	1.102	1.005
301.	14	1.103	0.4488	1.1811	1.2093	0.9876	0.0	0.0	-0.083	12.80	65.9	1.103	1.005
321.	15	1.196	0.5204	0.7067	0.7580	0.8748	0.0	0.0	-0.055	12.80	65.9	1.196	1.013
341.	16	1.150	0.4811	0.7510	0.7846	0.9390	0.0	0.0	-0.071	12.80	65.9	1.150	1.009
1.	17	1.070	0.4331	0.8189	0.8307	0.9964	0.0	0.0	-0.082	12.80	65.9	1.070	1.002
21.	18	1.015	0.4065	0.8452	0.8444	1.0123	0.0	0.0	-0.080	12.80	65.9	1.015	0.999

STAGE 4
MOTOR

FLOW SWIRL= 43.990DEG PARTICLE SWIRL= 81.440DEG PSAVG= 22.59PSIA = 155756.PA
 PTAVG= 25.78PSIA = 177760.PA TTAVG= 637.2DEG R = 354.0DEG K VELAVG= 526.0FPS =160.3MPS
 RVELAVG= 910.8FPS = 277.6MPS AXVELAVG= 483.9FPS =147.5MPS U= 975.FPS = 297.MPS

THETA	SEG NO	VEL	MN	PS	PT	TT	WBL LBM/SEC	WBL KG/SEC	DF	INCIDENCE IN DEG	BETA IN DEG	AXIAL VEL	REL VEL
44.	1	0.979	0.4209	0.8505	0.8417	1.0118	0.0	0.0	0.502	9.13	31.5	0.979	0.996
64.	2	0.946	0.4063	0.8549	0.8391	1.0118	0.0	0.0	0.525	10.21	30.4	0.946	0.993
84.	3	0.911	0.3903	0.8622	0.8390	1.0142	0.0	0.0	0.546	11.37	29.2	0.911	0.991
104.	4	0.863	0.3694	0.8713	0.8394	1.0185	0.0	0.0	0.570	12.97	27.6	0.863	0.988
124.	5	0.763	0.3236	0.8660	0.8158	1.0268	0.0	0.0	0.639	16.30	24.3	0.763	0.995
144.	6	0.811	0.3325	1.1499	1.0875	1.1017	0.0	0.0	0.563	14.69	25.9	0.811	0.986
164.	7	0.874	0.3621	1.1940	1.1451	1.0812	0.0	0.0	0.521	12.60	28.0	0.874	0.989
184.	8	0.936	0.4007	1.2062	1.1803	1.0181	0.0	0.0	0.479	10.54	30.1	0.936	0.993
204.	9	1.020	0.4476	1.1613	1.1675	0.9765	0.0	0.0	0.422	7.76	32.8	1.020	1.000
224.	10	1.075	0.4729	1.1565	1.1909	0.9762	0.0	0.0	0.386	5.98	34.6	1.075	1.006
244.	11	1.097	0.4817	1.1658	1.1970	0.9813	0.0	0.0	0.373	5.27	35.3	1.097	1.008
264.	12	1.104	0.4839	1.1735	1.2067	0.9849	0.0	0.0	0.370	5.05	35.5	1.104	1.009
284.	13	1.106	0.4844	1.1764	1.2100	0.9868	0.0	0.0	0.368	4.99	35.6	1.106	1.009
304.	14	1.107	0.4845	1.1762	1.2100	0.9876	0.0	0.0	0.368	4.96	35.6	1.107	1.009
324.	15	1.174	0.5494	0.7199	0.7744	0.8749	0.0	0.0	0.330	2.82	37.8	1.174	1.019
344.	16	1.143	0.5146	0.7549	0.7924	0.9390	0.0	0.0	0.367	3.90	36.9	1.143	1.014
4.	17	1.073	0.4671	0.8167	0.8308	0.9964	0.0	0.0	0.427	6.04	34.6	1.073	1.005
24.	18	1.017	0.4378	0.8442	0.8436	1.0123	0.0	0.0	0.472	7.88	32.7	1.017	0.999

STATOR

FLOW SWIRL= 45.28DEG

PTAVG= 33.77PSIA = 232909.PA

RVELAVG= 657.7FPS = 200.5MPS

PARTICLE SWIRL= 89.66DEG

TTAVG= 702.2DEG R = 390.1DEG K

AXVELAVG= 525.4FPS =160.1MPS

PSAVG= 26.12PSIA = 180120.PA

VELAVG= 770.2FPS =234.8MPS

U= 955.FPS = 291.MPS

THETA	SEG NO	VEL	MN	PS	PT	TT	WBL LBM/SEC	WBL KG/SEC	DF	INCIDENCE IN DEG	ALPHA IN DEG	AXIAL VEL	REL VEL
45.	1	0.985	0.6012	0.8624	0.8710	1.0135	0.0	0.0	0.416	0.45	40.8	0.950	0.950
65.	2	0.985	0.6011	0.8771	0.8657	1.0140	0.0	0.0	0.440	1.59	39.6	0.927	0.927
85.	3	0.984	0.5994	0.8690	0.8566	1.0165	0.0	0.0	0.460	2.58	38.6	0.907	0.907
105.	4	0.980	0.5959	0.8511	0.8366	1.0211	0.0	0.0	0.482	3.68	37.5	0.884	0.884
125.	5	0.968	0.5857	0.8015	0.7817	1.0278	0.0	0.0	0.542	6.82	34.4	0.821	0.821
145.	6	0.999	0.5875	1.0249	1.0007	1.0894	0.0	0.0	0.465	3.05	38.1	0.897	0.897
165.	7	1.014	0.5998	1.1105	1.0946	1.0795	0.0	0.0	0.419	1.12	40.1	0.936	0.936
185.	8	1.027	0.6214	1.1754	1.1788	1.0372	0.0	0.0	0.373	-0.91	42.1	0.978	0.978
205.	9	1.028	0.6383	1.1601	1.1800	0.9871	0.0	0.0	0.324	-3.73	44.9	1.035	1.035
225.	10	1.019	0.6366	1.1661	1.1844	0.9750	0.0	0.0	0.286	-5.54	46.7	1.073	1.073
245.	11	1.012	0.6309	1.1862	1.1992	0.9786	0.0	0.0	0.269	-6.17	47.4	1.086	1.086
265.	12	1.009	0.6275	1.1983	1.2081	0.9821	0.0	0.0	0.263	-6.35	47.6	1.090	1.090
285.	13	1.009	0.6262	1.2024	1.2109	0.9839	0.0	0.0	0.261	-6.42	47.6	1.091	1.091
305.	14	1.008	0.6258	1.2023	1.2105	0.9847	0.0	0.0	0.259	-6.45	47.6	1.092	1.092
325.	15	1.031	0.6797	0.7616	0.8027	0.8828	0.0	0.0	0.237	-8.42	49.6	1.133	1.133
345.	16	0.990	0.6323	0.7950	0.8049	0.9311	0.0	0.0	0.277	-6.49	47.7	1.093	1.093
5.	17	0.975	0.6033	0.8548	0.8453	0.9858	0.0	0.0	0.336	-3.34	44.5	1.027	1.027
25.	18	0.980	0.5992	0.8813	0.8686	1.0099	0.0	0.0	0.384	-1.02	42.2	0.980	0.980

STAGE 5
ROTOR

FLOW SWIRL= 50.72DEG

PTAVG= 33.34PSIA = 229849.PA

RVELAVG= 871.5FPS = 265.6MPS

PARTICLE SWIRL= 95.10DEG

TTAVG= 702.2DEG R = 390.1DEG K

AXVELAVG= 547.8FPS =167.0MPS

PSAVG= 28.37PSIA = 195626.PA

VELAVG= 607.7FPS =185.2MPS

U= 939.FPS = 286.MPS

THETA	SEG NO	VEL	MN	PS	PT	TT	WBL LBM/SEC	WBL KG/SEC	DF	INCIDENCE IN DEG	BETA IN DEG	AXIAL VEL	REL VEL
51.	1	0.946	0.4491	0.8893	0.8689	1.0135	0.0	0.0	0.362	-0.02	36.9	0.946	0.990
71.	2	0.925	0.4383	0.8839	0.8581	1.0140	0.0	0.0	0.382	0.84	36.1	0.925	0.988
91.	3	0.908	0.4293	0.8740	0.8440	1.0165	0.0	0.0	0.398	1.52	35.4	0.908	0.985
111.	4	0.869	0.4191	0.8536	0.8195	1.0211	0.0	0.0	0.417	2.28	34.6	0.889	0.983
131.	5	0.838	0.3930	0.7932	0.7507	1.0278	0.0	0.0	0.473	4.34	32.6	0.838	0.978
151.	6	0.904	0.4126	1.0238	0.9791	1.0894	0.0	0.0	0.359	1.69	35.2	0.904	0.985
171.	7	0.946	0.4345	1.1048	1.0700	1.0795	0.0	0.0	0.315	0.01	36.9	0.946	0.990
191.	8	0.983	0.4616	1.1751	1.1568	1.0372	0.0	0.0	0.280	-1.45	38.4	0.983	0.996
211.	9	1.032	0.4983	1.1665	1.1759	0.9871	0.0	0.0	0.237	-3.37	40.3	1.032	1.004
231.	10	1.069	0.5204	1.1681	1.1952	0.9750	0.0	0.0	0.204	-4.78	41.7	1.069	1.011
251.	11	1.086	0.5280	1.1811	1.2150	0.9796	0.0	0.0	0.199	-5.42	42.3	1.086	1.014
271.	12	1.092	0.5304	1.1890	1.2251	0.9821	0.0	0.0	0.183	-5.66	42.6	1.092	1.015
291.	13	1.045	0.5312	1.1911	1.2280	0.9839	0.0	0.0	0.181	-5.76	42.7	1.095	1.016
311.	14	1.096	0.5317	1.1903	1.2275	0.9847	0.0	0.0	0.179	-5.81	42.7	1.096	1.016
331.	15	1.118	0.5746	0.7702	0.8197	0.8828	0.0	0.0	0.215	-6.61	43.5	1.118	1.020
351.	16	1.077	0.5372	0.8025	0.8310	0.9311	0.0	0.0	0.259	-5.08	42.0	1.077	1.012
11.	17	1.021	0.4928	0.8579	0.8617	0.9958	0.0	0.0	0.301	-2.92	39.8	1.021	1.002
31.	18	0.976	0.4646	0.8857	0.8736	1.0099	0.0	0.0	0.336	-1.19	36.1	0.976	0.995

STAGE 6

FLOW SWIRL= 51.05DEG

PTAVG= 40.25PSIA = 277528.PA

RVELAVG= 713.7FPS = 217.5MPS

PARTICLE SWIRL=100.38DEG

TTAVG= 746.8DEG R = 414.9DEG K

AXVELAVG= 573.9FPS =174.9MPS

PSAVG= 31.73PSIA = 216780.PA

VELAVG= 764.5FPS = 233.0MPS

U= 926.FPS = 292.MPS

THETA	SEG NO	VEL	MN	PS	PT	TT	WBL LBM/SEC	WBL KG/SEC	DF	INCIDENCE IN DEG	ALPHA IN DEG	AXIAL VEL	REL VEL
51.	1	0.978	0.5719	0.9094	0.8940	1.0174	0.0	0.0	0.343	-6.64	45.1	0.930	0.930
71.	2	0.977	0.5704	0.9019	0.8961	1.0195	0.0	0.0	0.363	-5.61	44.1	0.911	0.911
91.	3	0.976	0.5693	0.8888	0.8721	1.0220	0.0	0.0	0.379	-4.90	43.3	0.906	0.906
111.	4	0.972	0.5662	0.8655	0.8472	1.0257	0.0	0.0	0.397	-3.84	42.3	0.878	0.878
131.	5	0.959	0.5563	0.8023	0.7797	1.0311	0.0	0.0	0.449	-1.04	39.5	0.827	0.827
151.	6	0.997	0.5659	0.9784	0.9573	1.0804	0.0	0.0	0.328	-6.90	45.4	0.935	0.935
171.	7	1.007	0.5738	1.0623	1.0456	1.0728	0.0	0.0	0.278	-9.11	47.6	0.977	0.977
191.	8	1.017	0.5892	1.1491	1.1445	1.0419	0.0	0.0	0.243	-10.86	49.4	1.010	1.010
211.	9	1.029	0.6107	1.1553	1.1704	0.9958	0.0	0.0	0.205	-13.13	51.6	1.054	1.054
231.	10	1.030	0.6183	1.1530	1.1754	0.9750	0.0	0.0	0.174	-14.87	53.4	1.088	1.088
251.	11	1.027	0.6171	1.1627	1.1841	0.9730	0.0	0.0	0.157	-15.65	54.2	1.104	1.104
271.	12	1.025	0.6155	1.1696	1.1896	0.9746	0.0	0.0	0.150	-15.95	54.5	1.110	1.110
291.	13	1.025	0.6148	1.1713	1.1906	0.9756	0.0	0.0	0.147	-16.08	54.6	1.112	1.112
311.	14	1.025	0.6147	1.1701	1.1993	0.9761	0.0	0.0	0.145	-16.15	54.6	1.114	1.114
331.	15	1.018	0.6391	0.8176	0.8480	0.9949	0.0	0.0	0.194	-14.40	52.9	1.079	1.079
351.	16	0.987	0.6036	0.8492	0.8558	0.9347	0.0	0.0	0.242	-12.03	50.5	1.032	1.032
11.	17	0.975	0.5808	0.8865	0.8776	0.9812	0.0	0.0	0.283	-9.80	48.3	0.990	0.990
31.	18	0.976	0.5732	0.9070	0.8926	1.0086	0.0	0.0	0.317	-7.98	46.5	0.955	0.955

STAGE 6
ROTOR

FLOW SWIRL= 56.130 DEG PARTICLE SWIRL=105.45 DEG PS AVG= 33.07PSIA = 229020.PA
PTAVG= 39.65PSIA = 273392.PA TTAVG= 746.80 DEG R = 414.90 DEG K VELAVG= 661.7FPS = 201.7MPS
RVELAVG= 907.5FPS = 276.6MPS AXVELAVG= 613.4FPS = 187.0MPS U= 915.FPS = 279.MPS

THETA	SEG NO	VEL	MN	PS	PT	TT	WBL LBM/SEC	WBL KG/SEC	DF	INCIDENCE IN DEG	BETA IN DEG	AXIAL VEL	REL VEL
56.	1	0.926	0.4642	0.9181	0.8870	1.0174	0.0	0.0	0.309	-1.19	39.7	0.926	0.981
76.	2	0.909	0.4545	0.9103	0.8743	1.0195	0.0	0.0	0.325	-0.48	39.0	0.909	0.977
96.	3	0.896	0.4470	0.8962	0.8569	1.0220	0.0	0.0	0.338	0.07	38.4	0.896	0.974
116.	4	0.880	0.4384	0.8708	0.8283	1.0257	0.0	0.0	0.354	0.69	37.8	0.880	0.971
136.	5	0.839	0.4156	0.7998	0.7509	1.0311	0.0	0.0	0.405	2.45	36.1	0.838	0.963
156.	6	0.940	0.4572	0.9775	0.9402	1.0804	0.0	0.0	0.242	-1.76	40.3	0.940	0.994
176.	7	0.987	0.4824	1.0536	1.0295	1.0728	0.0	0.0	0.186	-3.60	42.1	0.987	0.995
196.	8	1.019	0.5065	1.1400	1.1318	1.0419	0.0	0.0	0.152	-4.86	43.4	1.019	1.003
216.	9	1.055	0.5381	1.1527	1.1699	0.9958	0.0	0.0	0.127	-6.27	44.8	1.055	1.013
236.	10	1.087	0.5612	1.1501	1.1871	0.9750	0.0	0.0	0.107	-7.45	46.0	1.087	1.022
256.	11	1.104	0.5712	1.1557	1.2017	0.9730	0.0	0.0	0.093	-8.09	46.6	1.104	1.027
276.	12	1.112	0.5750	1.1596	1.2092	0.9746	0.0	0.0	0.094	-9.37	46.9	1.112	1.030
296.	13	1.115	0.5766	1.1596	1.2107	0.9756	0.0	0.0	0.079	-8.50	47.0	1.115	1.031
316.	14	1.117	0.5775	1.1577	1.2095	0.9761	0.0	0.0	0.076	-8.58	47.1	1.117	1.031
336.	15	1.066	0.5751	0.8259	0.8617	0.8949	0.0	0.0	0.205	-6.68	45.2	1.066	1.016
356.	16	1.016	0.5354	0.8602	0.8717	0.9347	0.0	0.0	0.248	-4.84	43.3	1.016	1.003
16.	17	0.990	0.5014	0.8964	0.9971	0.9912	0.0	0.0	0.270	-3.33	41.8	0.990	0.993
36.	18	0.950	0.4783	0.9156	0.8925	1.0086	0.0	0.0	0.289	-2.12	40.6	0.950	0.996

STATOR

FLOW SWIRL= 56.070 DEG PARTICLE SWIRL=109.140 DEG PS AVG= 36.25PSIA = 249959.PA
PTAVG= 46.14PSIA = 318152.PA TTAVG= 795.90 DEG R = 442.20 DEG K VELAVG= 792.5FPS = 241.6MPS
RVELAVG= 789.3FPS = 240.6MPS AXVELAVG= 646.2FPS = 197.0MPS U= 906.FPS = 276.MPS

THETA	SEG NO	VEL	MN	PS	PT	TT	WBL LBM/SEC	WBL KG/SEC	DF	INCIDENCE IN DEG	ALPHA IN DEG	AXIAL VEL	REL VEL
56.	1	0.962	0.5642	0.9427	0.9181	1.0197	0.0	0.0	0.349	-4.24	49.6	0.904	0.904
76.	2	0.959	0.5616	0.9345	0.9084	1.0233	0.0	0.0	0.364	-3.29	48.7	0.887	0.887
96.	3	0.957	0.5594	0.9198	0.8916	1.0256	0.0	0.0	0.376	-2.56	48.0	0.874	0.874
116.	4	0.953	0.5560	0.8917	0.8632	1.0284	0.0	0.0	0.390	-1.68	47.1	0.859	0.859
136.	5	0.937	0.5455	0.8218	0.7894	1.0312	0.0	0.0	0.435	1.10	44.3	0.812	0.812
156.	6	0.999	0.5732	0.9375	0.9189	1.0687	0.0	0.0	0.286	-7.79	53.2	0.967	0.967
176.	7	1.015	0.5850	1.0041	0.9931	1.0619	0.0	0.0	0.231	-10.84	56.2	1.023	1.023
196.	8	1.028	0.6003	1.0917	1.0926	1.0378	0.0	0.0	0.197	-12.73	58.1	1.059	1.059
216.	9	1.041	0.6210	1.1212	1.1410	0.9992	0.0	0.0	0.172	-14.24	59.6	1.089	1.089
236.	10	1.048	0.6329	1.1275	1.1587	0.9756	0.0	0.0	0.152	-15.43	60.8	1.113	1.113
256.	11	1.051	0.6366	1.1313	1.1661	0.9703	0.0	0.0	0.137	-16.25	61.6	1.130	1.130
276.	12	1.053	0.6379	1.1319	1.1680	0.9703	0.0	0.0	0.128	-16.72	62.1	1.139	1.139
296.	13	1.054	0.6387	1.1295	1.1663	0.9707	0.0	0.0	0.123	-16.99	62.4	1.145	1.145
316.	14	1.055	0.6393	1.1261	1.1634	0.9709	0.0	0.0	0.120	-17.14	62.5	1.148	1.148
336.	15	0.988	0.6158	0.8913	0.9037	0.9109	0.0	0.0	0.250	-10.40	55.9	1.015	1.015
356.	16	0.970	0.5927	0.9199	0.9158	0.9446	0.0	0.0	0.293	-7.87	53.3	0.968	0.968
16.	17	0.966	0.5773	0.9359	0.9206	0.9832	0.0	0.0	0.315	-6.48	51.9	0.943	0.943
36.	18	0.964	0.5685	0.9428	0.9212	1.0089	0.0	0.0	0.332	-5.35	50.8	0.923	0.923

STAGE 7
ROTOR

FLOW SWIRL= 59.550 DEG PARTICLE SWIRL=112.610 DEG PS AVG= 39.33PSIA = 271149.PA
PTAVG= 47.52PSIA = 327635.PA TTAVG= 795.90 DEG R = 442.20 DEG K VELAVG= 694.2FPS = 211.6MPS
RVELAVG= 991.2FPS = 302.1MPS AXVELAVG= 672.9FPS = 205.1MPS U= 895.FPS = 273.MPS

THETA	SEG NO	VEL	MN	PS	PT	TT	WBL LBM/SEC	WBL KG/SEC	DF	INCIDENCE IN DEG	BETA IN DEG	AXIAL VEL	REL VEL
60.	1	0.899	0.4572	0.9533	0.9097	1.0197	0.0	0.0	0.365	-0.40	39.2	0.999	0.960
80.	2	0.885	0.4484	0.9433	0.8957	1.0233	0.0	0.0	0.377	0.14	38.7	0.885	0.962
100.	3	0.874	0.4426	0.9262	0.8761	1.0256	0.0	0.0	0.386	0.56	38.2	0.874	0.958
120.	4	0.861	0.4352	0.8968	0.8447	1.0284	0.0	0.0	0.398	1.05	37.7	0.861	0.955
140.	5	0.821	0.4137	0.8205	0.7633	1.0312	0.0	0.0	0.441	2.61	36.2	0.821	0.944
160.	6	0.963	0.4795	0.9443	0.9136	1.0687	0.0	0.0	0.261	-2.76	41.6	0.963	0.985
180.	7	1.022	0.5123	1.0048	0.9934	1.0619	0.0	0.0	0.206	-4.97	43.7	1.022	1.005
200.	8	1.061	0.5393	1.0873	1.0954	1.0378	0.0	0.0	0.167	-6.21	45.0	1.061	1.019
220.	9	1.092	0.5672	1.1143	1.1458	0.9982	0.0	0.0	0.138	-7.24	46.0	1.092	1.030
240.	10	1.118	0.5883	1.1171	1.1673	0.9756	0.0	0.0	0.118	-8.08	46.9	1.118	1.040
260.	11	1.137	0.6007	1.1165	1.1760	0.9703	0.0	0.0	0.104	-8.69	47.5	1.137	1.047
280.	12	1.149	0.6074	1.1141	1.1916	0.9703	0.0	0.0	0.095	-9.06	47.9	1.146	1.051
300.	13	1.155	0.6110	1.1101	1.1807	0.9707	0.0	0.0	0.091	-9.27	49.1	1.155	1.054
320.	14	1.159	0.6131	1.1058	1.1782	0.9709	0.0	0.0	0.088	-9.39	48.2	1.159	1.056
340.	15	1.001	0.5426	0.9047	0.9141	0.9108	0.0	0.0	0.310	-4.13	42.9	1.001	0.998
360.	16	0.955	0.5066	0.9358	0.9220	0.9446	0.0	0.0	0.328	-2.48	41.3	0.955	0.983
20.	17	0.933	0.4842	0.9500	0.9223	0.9832	0.0	0.0	0.340	-1.67	40.5	0.933	0.976
40.	18	0.916	0.4696	0.9550	0.9179	1.0089	0.0	0.0	0.351	-1.03	39.8	0.916	0.971

STATOR

FLOW SWIRL= 59.52DEG

PARTICLE SWIRL=115.75DEG

PSAVG= 44.10PSIA = 304065.PA

PTAVG= 57.70PSIA = 397855.PA TTAGV= 861.90DEG R = 478.80DEG K

VELAVG= 866.4FPS = 264.1MPS

RVELAVG= 851.1FPS = 259.4MPS AXVELAVG= 732.4FPS = 223.2MPS

U= 885.FPS = 270.MPS

THETA	SEG NO	VEL	MN	PS	PT	TT	MBL LBM/SEC	WBL KG/SEC	DF	INCIDENCE IN DEG	ALPHA IN DEG	AXIAL VEL	REL VEL
60.	1	0.938	0.5791	0.9817	0.9400	1.0203	0.0	0.0	0.312	-11.51	51.5	0.871	0.871
80.	2	0.934	0.5755	0.9707	0.9269	1.0245	0.0	0.0	0.323	-10.77	50.8	0.858	0.858
100.	3	0.931	0.5730	0.9516	0.9069	1.0264	0.0	0.0	0.333	-10.20	50.2	0.848	0.848
120.	4	0.926	0.5692	0.9209	0.8752	1.0282	0.0	0.0	0.345	-9.46	49.5	0.835	0.835
140.	5	0.908	0.5575	0.8431	0.7944	1.0279	0.0	0.0	0.395	-6.96	47.0	0.792	0.792
160.	6	1.002	0.6077	0.9214	0.9016	1.0650	0.0	0.0	0.210	-17.31	57.3	0.980	0.980
180.	7	1.027	0.6250	0.9812	0.9735	1.0617	0.0	0.0	0.154	-20.54	60.5	1.045	1.045
200.	8	1.048	0.6456	1.0580	1.0677	1.0406	0.0	0.0	0.118	-22.76	62.8	1.092	1.092
220.	9	1.065	0.6710	1.0802	1.1140	1.0014	0.0	0.0	0.095	-24.39	64.4	1.128	1.128
240.	10	1.079	0.6995	1.0796	1.1305	0.9757	0.0	0.0	0.079	-25.58	65.6	1.156	1.156
260.	11	1.088	0.6991	1.0751	1.1365	0.9677	0.0	0.0	0.067	-26.42	66.4	1.176	1.176
280.	12	1.093	0.7032	1.0723	1.1378	0.9667	0.0	0.0	0.060	-26.92	66.9	1.187	1.187
300.	13	1.096	0.7052	1.0687	1.1359	0.9669	0.0	0.0	0.055	-27.19	67.2	1.194	1.194
320.	14	1.098	0.7064	1.0648	1.1330	0.9670	0.0	0.0	0.053	-27.35	67.3	1.198	1.198
340.	15	0.939	0.6114	0.9929	0.9656	0.9226	0.0	0.0	0.261	-15.17	55.2	0.939	0.939
360.	16	0.944	0.6062	0.9819	0.9605	0.9479	0.0	0.0	0.280	-13.93	53.9	0.914	0.914
20.	17	0.944	0.5952	0.9827	0.9528	0.9818	0.0	0.0	0.289	-13.07	53.1	0.900	0.900
40.	18	0.941	0.5853	0.9844	0.9471	1.0078	0.0	0.0	0.299	-12.32	52.3	0.886	0.886

STAGE 8
ROTOR

FLOW SWIRL= 63.72DEG

PARTICLE SWIRL=119.96DEG

PSAVG= 47.22PSIA = 325583.PA

PTAVG= 58.75PSIA = 405041.PA TTAGV= 861.90DEG R = 478.90DEG K

VELAVG= 795.7FPS = 239.5MPS

RVELAVG= 987.7FPS = 301.0MPS AXVELAVG= 749.3FPS = 228.4MPS

U= 879.FPS = 268.MPS

THETA	SEG NO	VEL	MN	PS	PT	TT	MBL LBM/SEC	WBL KG/SEC	DF	INCIDENCE IN DEG	BETA IN DEG	AXIAL VEL	REL VEL
64.	1	1.000	0.5591	0.9256	0.9184	1.0203	-0.268	-0.121	0.157	-12.00	49.4	1.000	1.000
84.	2	0.985	0.5491	0.9171	0.9033	1.0245	-0.263	-0.119	0.173	-11.42	48.8	0.985	0.993
104.	3	0.973	0.5412	0.9008	0.8823	1.0264	-0.254	-0.115	0.188	-10.93	48.3	0.973	0.988
124.	4	0.957	0.5312	0.8738	0.8499	1.0282	-0.241	-0.109	0.208	-10.28	47.7	0.957	0.982
144.	5	0.906	0.5017	0.8039	0.7663	1.0279	-0.209	-0.095	0.273	-8.20	45.6	0.906	0.962
164.	6	0.903	0.4909	0.9557	0.9044	1.0650	0.163	0.074	0.260	-8.07	45.5	0.903	0.961
184.	7	0.926	0.5050	1.0271	0.9811	1.0617	0.297	0.130	0.226	-9.04	46.4	0.926	0.970
204.	8	0.956	0.5275	1.1127	1.0793	1.0406	0.364	0.165	0.188	-10.25	47.7	0.956	0.981
224.	9	0.988	0.5570	1.1413	1.1308	1.0014	0.383	0.174	0.151	-11.52	48.9	0.988	0.994
244.	10	1.018	0.5827	1.1413	1.1528	0.9757	0.370	0.168	0.119	-12.67	50.1	1.018	1.007
264.	11	1.039	0.5982	1.1372	1.1626	0.9677	0.362	0.164	0.096	-13.47	50.9	1.039	1.016
284.	12	1.051	0.6063	1.1333	1.1660	0.9667	0.358	0.162	0.084	-13.94	51.3	1.051	1.022
304.	13	1.058	0.6105	1.1290	1.1653	0.9669	0.355	0.161	0.077	-14.19	51.6	1.058	1.025
324.	14	1.062	0.6125	1.1249	1.1630	0.9670	0.355	0.161	0.074	-14.32	51.7	1.062	1.026
344.	15	1.064	0.6297	0.9204	0.9651	0.9226	-0.274	-0.124	0.076	-14.42	51.8	1.064	1.027
4.	16	1.056	0.6154	0.9135	0.9467	0.9479	-0.299	-0.136	0.091	-14.11	51.5	1.056	1.024
24.	17	1.040	0.5942	0.9177	0.9351	0.9818	-0.290	-0.132	0.112	-13.50	50.9	1.040	1.016
44.	18	1.019	0.5733	0.9247	0.9277	1.0078	-0.276	-0.125	0.136	-12.72	50.1	1.019	1.007

STATOR

FLOW SWIRL= 63.38DEG

PARTICLE SWIRL=122.13DEG

PSAVG= 51.26PSIA = 353432.PA

PTAVG= 68.21PSIA = 470285.PA TTAGV= 920.70DEG R = 511.50DEG K

VELAVG= 926.5FPS = 282.4MPS

RVELAVG= 919.2FPS = 280.2MPS AXVELAVG= 812.4FPS = 247.6MPS

U= 872.FPS = 266.MPS

THETA	SEG NO	VEL	MN	PS	PT	TT	MBL LBM/SEC	WBL KG/SEC	DF	INCIDENCE IN DEG	ALPHA IN DEG	AXIAL VEL	REL VEL
63.	1	0.990	0.6378	0.9347	0.9212	1.0191	0.0	0.0	0.190	-19.45	61.0	0.992	0.992
83.	2	0.981	0.6298	0.9304	0.9109	1.0243	0.0	0.0	0.203	-18.56	60.2	0.973	0.973
103.	3	0.973	0.6234	0.9180	0.8942	1.0266	0.0	0.0	0.215	-17.75	59.4	0.957	0.957
123.	4	0.961	0.6147	0.8962	0.8669	1.0288	0.0	0.0	0.231	-16.66	58.3	0.935	0.935
143.	5	0.923	0.5888	0.8422	0.7984	1.0289	0.0	0.0	0.285	-13.09	54.7	0.867	0.867
163.	6	0.937	0.5863	0.9864	0.9330	1.0684	0.0	0.0	0.273	-13.70	55.3	0.879	0.879
183.	7	0.958	0.6010	1.0468	1.0015	1.0657	0.0	0.0	0.245	-15.50	57.1	0.913	0.913
203.	8	0.980	0.6220	1.1227	1.0922	1.0463	0.0	0.0	0.216	-17.54	59.1	0.953	0.953
223.	9	1.002	0.6502	1.1400	1.1352	1.0071	0.0	0.0	0.189	-19.55	61.2	0.994	0.994
243.	10	1.022	0.6742	1.1278	1.1464	0.9782	0.0	0.0	0.166	-21.30	62.9	1.031	1.031
263.	11	1.035	0.6878	1.1145	1.1464	0.9671	0.0	0.0	0.150	-22.50	64.1	1.059	1.059
283.	12	1.042	0.6940	1.1066	1.1446	0.9647	0.0	0.0	0.141	-23.17	64.8	1.073	1.073
303.	13	1.046	0.6969	1.1007	1.1414	0.9644	0.0	0.0	0.136	-23.52	65.1	1.081	1.081
323.	14	1.048	0.6983	1.0961	1.1380	0.9644	0.0	0.0	0.133	-23.70	65.3	1.085	1.085
343.	15	1.047	0.7152	0.8999	0.9489	0.9204	0.0	0.0	0.137	-23.65	65.3	1.084	1.084
3.	16	1.034	0.6964	0.8996	0.9326	0.9439	0.0	0.0	0.146	-22.93	64.5	1.067	1.067
23.	17	1.019	0.6724	0.9111	0.9247	0.9772	0.0	0.0	0.159	-21.85	63.5	1.043	1.043
43.	18	1.003	0.6513	0.9267	0.9237	1.0046	0.0	0.0	0.175	-20.58	62.2	1.015	1.015

STAGE 9
ROTOR

FLOW SWIRL= 66.26DEG PARTICLE SWIRL=125.00DEG PSAVG= 56.35PSIA = 388486.PA
PTAVG= 71.04PSIA = 489781.PA TTAVG= 920.7DEG R = 511.5DEG K VELAVG= 934.2FPS =254.3MPS
RVELAVG=1039.9FPS = 317.0MPS AXVELAVG= 806.8FPS =245.9MPS U= 867.FPS = 264.MPS

THETA	SEG NO	VEL	MN	PS	PT	TT	WBL LBM/SEC	WBL KG/SEC	DF	INCIDENCE IN DEG	BETA IN DEG	AXIAL VEL	REL VEL
66.	1	0.993	0.5715	0.9334	0.9219	1.0191	0.0	0.0	0.207	-12.37	50.7	0.993	0.996
86.	2	0.975	0.5590	0.9294	0.9095	1.0243	0.0	0.0	0.221	-11.69	50.0	0.975	0.987
106.	3	0.958	0.5486	0.9174	0.8910	1.0266	0.0	0.0	0.235	-11.07	49.4	0.958	0.980
126.	4	0.937	0.5353	0.8957	0.8617	1.0288	0.0	0.0	0.256	-10.25	48.6	0.937	0.970
146.	5	0.872	0.4962	0.8407	0.7876	1.0288	0.0	0.0	0.328	-7.61	45.9	0.872	0.942
166.	6	0.886	0.4947	0.9816	0.9185	1.0684	0.0	0.0	0.294	-8.16	46.5	0.886	0.948
186.	7	0.919	0.5147	1.0425	0.9596	1.0657	0.0	0.0	0.253	-9.51	47.8	0.919	0.962
206.	8	0.957	0.5424	1.1195	1.0823	1.0463	0.0	0.0	0.213	-11.02	49.3	0.957	0.979
226.	9	0.995	0.5764	1.1401	1.1303	1.0071	0.0	0.0	0.180	-12.46	50.8	0.995	0.997
246.	10	1.029	0.6068	1.1301	1.1471	0.9782	0.0	0.0	0.154	-13.72	52.6	1.029	1.013
266.	11	1.055	0.6266	1.1169	1.1518	0.9671	0.0	0.0	0.138	-14.62	52.9	1.055	1.026
286.	12	1.070	0.6371	1.1083	1.1527	0.9647	0.0	0.0	0.130	-15.15	53.4	1.070	1.033
306.	13	1.078	0.6424	1.1019	1.1511	0.9644	0.0	0.0	0.125	-15.43	53.7	1.078	1.037
326.	14	1.082	0.6451	1.0969	1.1484	0.9644	0.0	0.0	0.123	-15.57	53.9	1.082	1.039
346.	15	1.078	0.6584	0.9043	0.9577	0.9204	0.0	0.0	0.135	-15.43	53.7	1.078	1.037
6.	16	1.062	0.6395	0.9028	0.9411	0.9439	0.0	0.0	0.153	-14.89	53.2	1.062	1.029
26.	17	1.040	0.6141	0.9124	0.9315	0.9772	0.0	0.0	0.172	-14.12	52.4	1.040	1.019
46.	18	1.015	0.5897	0.9260	0.9274	1.0046	0.0	0.0	0.191	-13.20	51.5	1.015	1.006

STATOR

FLOW SWIRL= 66.09DEG PARTICLE SWIRL=127.45DEG PSAVG= 64.38PSIA = 443904.PA
PTAVG= 83.02PSIA = 572415.PA TTAVG= 982.8DEG R = 546.0DEG K VELAVG= 904.8FPS =275.8MPS
RVELAVG= 916.8FPS = 279.4MPS AXVELAVG= 800.8FPS =244.1MPS U= 863.FPS = 262.MPS

THETA	SEG NO	VEL	MN	PS	PT	TT	WBL LBM/SEC	WBL KG/SEC	DF	INCIDENCE IN DEG	ALPHA IN DEG	AXIAL VEL	REL VEL
66.	1	0.985	0.5983	0.9405	0.9264	1.0170	0.0	0.0	0.170	-22.10	61.7	0.984	0.984
86.	2	0.976	0.5909	0.9363	0.9170	1.0227	0.0	0.0	0.182	-21.20	60.8	0.966	0.966
106.	3	0.967	0.5844	0.9254	0.9017	1.0250	0.0	0.0	0.195	-20.29	59.9	0.948	0.948
126.	4	0.954	0.5751	0.9070	0.8776	1.0269	0.0	0.0	0.213	-18.97	58.6	0.923	0.923
146.	5	0.910	0.5474	0.8653	0.8206	1.0262	0.0	0.0	0.276	-14.54	54.1	0.842	0.842
166.	6	0.936	0.5531	0.9853	0.9379	1.0656	0.0	0.0	0.247	-16.44	56.0	0.976	0.976
186.	7	0.962	0.5696	1.0348	0.9970	1.0646	0.0	0.0	0.212	-18.87	58.5	0.921	0.921
206.	8	0.988	0.5910	1.1049	1.0819	1.0480	0.0	0.0	0.178	-21.32	60.9	0.968	0.968
226.	9	1.012	0.6175	1.1247	1.1247	1.0111	0.0	0.0	0.151	-23.40	63.0	1.011	1.011
246.	10	1.031	0.6397	1.1159	1.1363	0.9815	0.0	0.0	0.130	-25.04	64.6	1.046	1.046
266.	11	1.043	0.6524	1.1042	1.1365	0.9698	0.0	0.0	0.116	-26.15	65.8	1.070	1.070
286.	12	1.049	0.6577	1.0980	1.1352	0.9659	0.0	0.0	0.108	-26.75	66.4	1.083	1.093
306.	13	1.053	0.6600	1.0935	1.1327	0.9656	0.0	0.0	0.104	-27.07	66.7	1.091	1.091
326.	14	1.054	0.6610	1.0897	1.1297	0.9657	0.0	0.0	0.102	-27.22	66.8	1.094	1.094
346.	15	1.044	0.6700	0.9086	0.9495	0.9236	0.0	0.0	0.113	-26.63	66.2	1.081	1.081
6.	16	1.028	0.6509	0.9110	0.9366	0.9443	0.0	0.0	0.126	-25.60	65.2	1.058	1.058
26.	17	1.012	0.6290	0.9211	0.9299	0.9753	0.0	0.0	0.140	-24.41	64.0	1.032	1.032
46.	18	0.997	0.6105	0.9339	0.9287	1.0020	0.0	0.0	0.156	-23.19	62.8	1.006	1.006

STAGE 10
ROTOR

FLOW SWIRL= 68.84DEG PARTICLE SWIRL=130.20DEG PSAVG= 69.70PSIA = 480542.PA
PTAVG= 96.02PSIA = 593068.PA TTAVG= 982.8DEG R = 546.0DEG K VELAVG= 821.9FPS =250.5MPS
RVELAVG=1004.1FPS = 306.1MPS AXVELAVG= 796.7FPS =239.9MPS U= 960.FPS = 262.MPS

THETA	SEG NO	VEL	MN	PS	PT	TT	WBL LBM/SEC	WBL KG/SEC	DF	INCIDENCE IN DEG	BETA IN DEG	AXIAL VEL	REL VEL
69.	1	0.994	0.5396	0.9407	0.9270	1.0170	0.0	0.0	0.156	-13.84	51.0	0.984	0.992
89.	2	0.967	0.5283	0.9360	0.9150	1.0227	0.0	0.0	0.171	-13.17	50.4	0.967	0.984
109.	3	0.950	0.5180	0.9246	0.8975	1.0250	0.0	0.0	0.188	-12.50	49.7	0.950	0.976
129.	4	0.927	0.5040	0.9051	0.8704	1.0269	0.0	0.0	0.213	-11.53	48.7	0.927	0.966
149.	5	0.853	0.4625	0.8579	0.8033	1.0262	0.0	0.0	0.297	-8.40	45.6	0.853	0.935
169.	6	0.886	0.4719	0.9777	0.9207	1.0656	0.0	0.0	0.241	-9.81	47.0	0.886	0.948
189.	7	0.927	0.4952	1.0302	0.9947	1.0646	0.0	0.0	0.190	-11.55	48.8	0.927	0.966
209.	8	0.972	0.5244	1.1025	1.0747	1.0480	0.0	0.0	0.140	-13.36	50.6	0.972	0.996
229.	9	1.011	0.5570	1.1250	1.1225	1.0111	0.0	0.0	0.102	-14.89	52.1	1.011	1.004
249.	10	1.043	0.5848	1.1181	1.1392	0.9815	0.0	0.0	0.078	-16.10	53.3	1.043	1.020
269.	11	1.066	0.6025	1.1070	1.1434	0.9688	0.0	0.0	0.063	-16.94	54.1	1.066	1.031
289.	12	1.079	0.6114	1.1005	1.1447	0.9659	0.0	0.0	0.056	-17.41	54.6	1.079	1.037
309.	13	1.096	0.6157	1.0957	1.1436	0.9656	0.0	0.0	0.052	-17.65	54.9	1.086	1.041
329.	14	1.090	0.6178	1.0917	1.1413	0.9657	0.0	0.0	0.050	-17.78	55.0	1.090	1.043
349.	15	1.074	0.6225	0.9134	0.9589	0.9236	0.0	0.0	0.077	-17.21	54.4	1.074	1.035
9.	16	1.052	0.6017	0.9152	0.9449	0.9443	0.0	0.0	0.101	-16.41	53.6	1.052	1.024
29.	17	1.028	0.5777	0.9237	0.9361	0.9753	0.0	0.0	0.122	-15.54	52.7	1.028	1.012
49.	18	1.005	0.5556	0.9350	0.9322	1.0020	0.0	0.0	0.141	-14.64	51.8	1.005	1.001

STATOR

FLOW SWIRL= 68.28DEG

PARTICLE SWIRL=132.29DEG

PSAVG= 78.99PSIA = 544600.PA

PTAVG= 98.59PSIA = 679732.PA

TTAVG=1037.0DEG R = 576.1DEG K

VELAVG= 869.3FPS =265.0MPS

RVELAVG= 921.0FPS = 280.7MPS

AXVELAVG= 783.1FPS =238.7MPS

U= 857.FPS = 261.MPS

THETA	SEG NO	VEL	MN	PS	PT	TT	WBL LBM/SEC	WBL KG/SEC	DF	INCIDENCE IN DEG	ALPHA IN DEG	AXIAL VEL	REL VEL
68.	1	0.979	0.5544	0.9504	0.9355	1.0158	0.0	0.0	0.138	-19.01	63.2	0.974	0.974
88.	2	0.970	0.5473	0.9466	0.9269	1.0223	0.0	0.0	0.151	-18.06	62.3	0.956	0.956
108.	3	0.960	0.5405	0.9376	0.9137	1.0251	0.0	0.0	0.165	-17.01	61.2	0.936	0.936
128.	4	0.945	0.5308	0.9224	0.8928	1.0272	0.0	0.0	0.188	-15.43	59.6	0.908	0.908
148.	5	0.939	0.5042	0.8886	0.8447	1.0274	0.0	0.0	0.265	-10.29	54.5	0.821	0.821
168.	6	0.935	0.5156	0.9841	0.9424	1.0645	0.0	0.0	0.214	-13.55	57.7	0.975	0.875
188.	7	0.964	0.5328	1.0254	0.9936	1.0649	0.0	0.0	0.170	-16.59	60.8	0.929	0.929
208.	8	0.996	0.5553	1.0872	1.0706	1.0502	0.0	0.0	0.127	-19.62	63.8	0.985	0.985
228.	9	1.022	0.5809	1.1063	1.1104	1.0145	0.0	0.0	0.097	-21.92	66.1	1.031	1.031
248.	10	1.041	0.6018	1.0992	1.1214	0.9836	0.0	0.0	0.077	-23.53	67.7	1.064	1.064
268.	11	1.053	0.6137	1.0890	1.1216	0.9689	0.0	0.0	0.064	-24.54	68.7	1.085	1.085
288.	12	1.058	0.6186	1.0843	1.1210	0.9649	0.0	0.0	0.058	-25.06	69.3	1.097	1.097
308.	13	1.061	0.6206	1.0806	1.1191	0.9642	0.0	0.0	0.054	-25.34	69.5	1.103	1.103
328.	14	1.063	0.6215	1.0775	1.1167	0.9642	0.0	0.0	0.052	-25.46	69.7	1.106	1.106
348.	15	1.040	0.6207	0.9177	0.9509	0.9249	0.0	0.0	0.073	-24.04	68.2	1.075	1.075
8.	16	1.020	0.6013	0.9245	0.9432	0.9440	0.0	0.0	0.092	-22.61	66.8	1.045	1.045
28.	17	1.003	0.5916	0.9339	0.9382	0.9733	0.0	0.0	0.109	-21.29	65.5	1.018	1.018
48.	18	0.990	0.5653	0.9448	0.9375	0.9999	0.0	0.0	0.124	-20.07	64.3	0.994	0.994

STAGE 11
ROTUR

FLOW SWIRL= 70.56DEG

PARTICLE SWIRL=134.57DEG

PSAVG= 82.66PSIA = 569905.PA

PTAVG=100.88PSIA = 695545.PA

TTAVG=1037.0DEG R = 576.1DEG K

VELAVG= 821.0FPS =250.3MPS

RVELAVG=1025.9FPS = 312.7MPS

AXVELAVG= 794.4FPS =242.1MPS

U= 851.FPS = 260.MPS

THETA	SEG NO	VEL	MN	PS	PT	TT	WBL LBM/SEC	WBL KG/SEC	DF	INCIDENCE IN DEG	BETA IN DEG	AXIAL VEL	REL VEL
71.	1	0.973	0.5188	0.9515	0.9341	1.0158	0.0	0.0	0.148	-10.94	49.8	0.973	0.986
91.	2	0.956	0.5076	0.9474	0.9232	1.0223	0.0	0.0	0.163	-10.29	49.2	0.956	0.978
111.	3	0.938	0.4966	0.9393	0.9076	1.0251	0.0	0.0	0.181	-9.57	48.5	0.938	0.970
131.	4	0.910	0.4810	0.9230	0.8839	1.0272	0.0	0.0	0.210	-8.47	47.4	0.910	0.958
151.	5	0.827	0.4354	0.8873	0.8265	1.0274	0.0	0.0	0.301	-5.00	43.9	0.827	0.924
171.	6	0.880	0.4562	0.8829	0.9267	1.0645	0.0	0.0	0.225	-7.24	46.1	0.880	0.945
191.	7	0.932	0.4841	1.0247	0.9830	1.0649	0.0	0.0	0.165	-9.34	48.2	0.932	0.967
211.	9	0.997	0.5176	1.0866	1.0657	1.0502	0.0	0.0	0.103	-11.45	50.3	0.987	0.992
231.	9	1.031	0.5514	1.1061	1.1110	1.0145	0.0	0.0	0.061	-13.06	52.0	1.031	1.013
251.	10	1.063	0.5788	1.0987	1.1264	0.9836	0.0	0.0	0.035	-14.20	53.1	1.063	1.029
271.	11	1.084	0.5956	1.0881	1.1300	0.9689	0.0	0.0	0.021	-14.93	53.8	1.084	1.040
291.	12	1.095	0.6036	1.0828	1.1314	0.9649	0.0	0.0	0.015	-15.31	54.2	1.095	1.045
311.	13	1.101	0.6074	1.0787	1.1305	0.9642	0.0	0.0	0.012	-15.52	54.4	1.101	1.049
331.	14	1.104	0.6091	1.0753	1.1295	0.9642	0.0	0.0	0.010	-15.61	54.5	1.104	1.050
351.	15	1.071	0.6023	0.9192	0.9600	0.9249	0.0	0.0	0.061	-14.48	53.4	1.071	1.033
11.	16	1.041	0.5782	0.9269	0.9501	0.9440	0.0	0.0	0.092	-13.43	52.3	1.041	1.018
31.	17	1.015	0.5542	0.9361	0.9425	0.9733	0.0	0.0	0.115	-12.50	51.4	1.015	1.006
51.	18	0.992	0.5338	0.9463	0.9388	0.9999	0.0	0.0	0.133	-11.66	50.6	0.992	0.995

STATOR

FLOW SWIRL= 69.53DEG

PARTICLE SWIRL=136.47DEG

PSAVG= 93.13PSIA = 642119.PA

PTAVG=114.19PSIA = 787298.PA

TTAVG=1094.0DEG R = 607.8DEG K

VELAVG= 856.3FPS =261.0MPS

RVELAVG= 954.0FPS = 290.8MPS

AXVELAVG= 791.4FPS =241.2MPS

U= 851.FPS = 259.MPS

THETA	SEG NO	VEL	MN	PS	PT	TT	WBL LBM/SEC	WBL KG/SEC	DF	INCIDENCE IN DEG	ALPHA IN DEG	AXIAL VEL	REL VEL
70.	1	0.968	0.5250	0.9651	0.9469	1.0144	0.0	0.0	0.121	-24.50	65.9	0.958	0.956
90.	2	0.958	0.5178	0.9618	0.9389	1.0217	0.0	0.0	0.133	-23.51	64.8	0.941	0.941
110.	3	0.947	0.5105	0.9547	0.9274	1.0249	0.0	0.0	0.148	-22.33	63.6	0.920	0.920
130.	4	0.929	0.4996	0.9442	0.9106	1.0273	0.0	0.0	0.173	-20.41	61.7	0.888	0.888
150.	5	0.879	0.4716	0.9206	0.8721	1.0283	0.0	0.0	0.257	-14.42	55.7	0.794	0.794
170.	6	0.925	0.4996	0.9888	0.9472	1.0614	0.0	0.0	0.186	-19.22	60.5	0.868	0.868
190.	7	0.962	0.5093	1.0200	0.9897	1.0637	0.0	0.0	0.135	-23.02	64.3	0.932	0.932
210.	8	1.005	0.5364	1.0690	1.0568	1.0511	0.0	0.0	0.087	-26.86	68.2	1.002	1.002
230.	9	1.037	0.5641	1.0839	1.0932	1.0174	0.0	0.0	0.057	-29.52	70.8	1.053	1.053
250.	10	1.066	0.5863	1.0750	1.1026	0.9859	0.0	0.0	0.039	-31.22	72.5	1.089	1.089
270.	11	1.072	0.5989	1.0646	1.1027	0.9696	0.0	0.0	0.029	-32.19	73.5	1.109	1.109
290.	12	1.078	0.6039	1.0604	1.1027	0.9647	0.0	0.0	0.024	-32.64	73.9	1.119	1.119
310.	13	1.081	0.6061	1.0571	1.1012	0.9636	0.0	0.0	0.022	-32.99	74.2	1.125	1.125
330.	14	1.083	0.6070	1.0543	1.0991	0.9636	0.0	0.0	0.020	-33.01	74.3	1.127	1.127
350.	15	1.037	0.5910	0.9284	0.9562	0.9277	0.0	0.0	0.056	-30.20	71.5	1.067	1.067
10.	16	1.010	0.5695	0.9416	0.9541	0.9450	0.0	0.0	0.079	-28.28	69.6	1.029	1.029
30.	17	0.992	0.5507	0.9504	0.9498	0.9720	0.0	0.0	0.097	-26.79	68.1	1.000	1.000
50.	18	0.978	0.5355	0.9600	0.9499	0.9979	0.0	0.0	0.110	-25.55	66.8	0.977	0.977

STAGE 12
ROTOR

FLOW SWIRL= 71.61DEG PARTICLE SWIRL=138.54DEG PSAVG= 97.79PSIA = 674215.PA
PTAVG=117.96PSIA = 813274.PA TTAVG=1094.0DEG R = 607.8DEG K VELAVG= 817.6FPS =249.2MPS
RVELAVG=1032.1FPS = 314.6MPS AXVELAVG= 794.4FPS =242.1MPS U= 850.FPS = 259.MPS

THETA	SEG NO	VEL	MN	PS	PT	TT	MBL LBM/SEC	MBL KG/SEC	DF	INCIDENCE IN DEG	BETA IN DEG	AXIAL VEL	REL VEL
72.	1	0.958	0.4949	0.9665	0.9446	1.0144	0.0	0.0	0.180	-11.69	48.9	0.958	0.979
92.	2	0.942	0.4845	0.9622	0.9341	1.0217	0.0	0.0	0.192	-11.08	48.3	0.942	0.972
112.	3	0.923	0.4733	0.9545	0.9201	1.0249	0.0	0.0	0.211	-10.32	47.5	0.923	0.963
132.	4	0.892	0.4566	0.9429	0.8996	1.0273	0.0	0.0	0.241	-9.11	46.3	0.892	0.950
152.	5	0.864	0.4100	0.9139	0.8489	1.0283	0.0	0.0	0.337	-5.44	42.6	0.864	0.914
172.	6	0.877	0.4411	0.9833	0.9293	1.0614	0.0	0.0	0.239	-8.48	45.7	0.877	0.943
192.	7	0.938	0.4727	1.0159	0.9786	1.0637	0.0	0.0	0.173	-10.92	48.1	0.938	0.970
212.	8	1.005	0.5111	1.0660	1.0527	1.0511	0.0	0.0	0.103	-13.43	50.6	1.005	1.001
232.	9	1.054	0.5463	1.0825	1.0956	1.0174	0.0	0.0	0.064	-15.17	52.4	1.054	1.024
252.	10	1.087	0.5734	1.0752	1.1102	0.9959	0.0	0.0	0.047	-16.29	53.5	1.087	1.041
272.	11	1.106	0.5894	1.0652	1.1134	0.9696	0.0	0.0	0.041	-16.93	54.1	1.106	1.051
292.	12	1.116	0.5965	1.0607	1.1148	0.9647	0.0	0.0	0.040	-17.25	54.5	1.116	1.056
312.	13	1.122	0.6000	1.0570	1.1139	0.9636	0.0	0.0	0.038	-17.43	54.6	1.122	1.059
332.	14	1.124	0.6016	1.0541	1.1121	0.9636	0.0	0.0	0.038	-17.52	54.7	1.124	1.060
352.	15	1.061	0.5769	0.9329	0.9661	0.9277	0.0	0.0	0.114	-15.41	52.6	1.061	1.028
12.	16	1.022	0.5492	0.9476	0.9616	0.9450	0.0	0.0	0.139	-14.05	51.3	1.022	1.009
32.	17	0.995	0.5260	0.9563	0.9546	0.9720	0.0	0.0	0.156	-13.05	50.3	0.995	0.996
52.	18	0.975	0.5081	0.9634	0.9498	0.9978	0.0	0.0	0.169	-12.31	49.5	0.975	0.986

STATOR

FLOW SWIRL= 70.50DEG PARTICLE SWIRL=140.32DEG PSAVG=108.22PSIA = 746137.PA
PTAVG=128.09PSIA = 883172.PA TTAVG=1126.5DEG R = 625.8DEG K VELAVG= 792.2FPS =241.5MPS
RVELAVG= 924.7FPS = 281.9MPS AXVELAVG= 734.0FPS =223.7MPS U= 850.FPS = 259.MPS

THETA	SEG NO	VEL	MN	PS	PT	TT	MBL LBM/SEC	MBL KG/SEC	DF	INCIDENCE IN DEG	ALPHA IN DEG	AXIAL VEL	REL VEL
71.	1	0.962	0.4730	0.9793	0.9617	1.0175	0.0	0.0	0.178	-21.31	65.5	0.947	0.947
91.	2	0.954	0.4669	0.9757	0.9544	1.0264	0.0	0.0	0.190	-20.33	64.5	0.932	0.932
111.	3	0.942	0.4601	0.9708	0.9456	1.0312	0.0	0.0	0.208	-18.99	63.2	0.910	0.910
131.	4	0.925	0.4503	0.9637	0.9332	1.0348	0.0	0.0	0.238	-16.76	61.0	0.876	0.876
151.	5	0.879	0.4269	0.9479	0.9055	1.0376	0.0	0.0	0.337	-9.89	54.1	0.777	0.777
171.	6	0.932	0.4473	0.9848	0.9518	1.0657	0.0	0.0	0.239	-16.62	60.8	0.874	0.874
191.	7	0.971	0.4667	1.0053	0.9829	1.0679	0.0	0.0	0.176	-21.35	65.5	0.948	0.948
211.	8	1.022	0.4956	1.0383	1.0341	1.0526	0.0	0.0	0.116	-26.20	70.4	1.031	1.031
231.	9	1.055	0.5218	1.0508	1.0652	1.0157	0.0	0.0	0.084	-29.01	73.2	1.084	1.084
251.	10	1.073	0.5404	1.0472	1.0756	0.9810	0.0	0.0	0.068	-30.45	74.7	1.112	1.112
271.	11	1.081	0.5499	1.0416	1.0774	0.9617	0.0	0.0	0.062	-31.11	75.3	1.125	1.125
291.	12	1.093	0.5532	1.0405	1.0789	0.9550	0.0	0.0	0.059	-31.37	75.6	1.131	1.131
311.	13	1.085	0.5548	1.0383	1.0778	0.9531	0.0	0.0	0.057	-31.54	75.7	1.134	1.134
331.	14	1.086	0.5553	1.0364	1.0762	0.9527	0.0	0.0	0.057	-31.61	75.8	1.136	1.136
351.	15	1.013	0.5232	0.9577	0.9725	0.9278	0.0	0.0	0.114	-26.65	70.8	1.039	1.039
11.	16	0.991	0.5063	0.9701	0.9738	0.9467	0.0	0.0	0.139	-24.63	68.8	1.003	1.003
31.	17	0.976	0.4921	0.9741	0.9685	0.9732	0.0	0.0	0.155	-23.21	67.4	0.979	0.979
51.	18	0.969	0.4910	0.9776	0.9649	0.9996	0.0	0.0	0.167	-22.20	66.4	0.962	0.962

STAGE 13
ROTOR

FLOW SWIRL= 72.33DEG PARTICLE SWIRL=142.15DEG PSAVG=112.03PSIA = 772451.PA
PTAVG=129.37PSIA = 891981.PA TTAVG=1126.5DEG R = 625.8DEG K VELAVG= 728.2FPS =222.0MPS
RVELAVG=1005.4FPS = 306.4MPS AXVELAVG= 713.7FPS =217.5MPS U= 850.FPS = 259.MPS

THETA	SEG NO	VEL	MN	PS	PT	TT	MBL LBM/SEC	MBL KG/SEC	DF	INCIDENCE IN DEG	BETA IN DEG	AXIAL VEL	REL VEL
72.	1	0.947	0.4264	0.9809	0.9603	1.0175	0.0	0.0	0.182	-8.16	43.5	0.947	0.977
92.	2	0.931	0.4175	0.9770	0.9517	1.0264	0.0	0.0	0.197	-7.61	42.9	0.931	0.971
112.	3	0.911	0.4070	0.9719	0.9413	1.0312	0.0	0.0	0.220	-6.85	42.1	0.911	0.963
132.	4	0.877	0.3909	0.9647	0.9264	1.0349	0.0	0.0	0.259	-5.58	40.9	0.877	0.951
152.	5	0.781	0.3465	0.9473	0.8900	1.0376	0.0	0.0	0.373	-1.80	37.1	0.781	0.919
172.	6	0.876	0.3847	0.9851	0.9428	1.0657	0.0	0.0	0.244	-5.54	40.8	0.876	0.951
192.	7	0.949	0.4174	1.0053	0.9790	1.0679	0.0	0.0	0.155	-8.24	43.5	0.949	0.978
212.	8	1.032	0.4586	1.0369	1.0343	1.0526	0.0	0.0	0.054	-11.14	46.4	1.032	1.011
232.	9	1.085	0.4916	1.0486	1.0680	1.0157	0.0	0.0	0.007	-12.87	48.2	1.085	1.034
252.	10	1.113	0.5138	1.0449	1.0802	0.9810	0.0	0.0	-0.005	-13.76	49.1	1.113	1.046
272.	11	1.126	0.5254	1.0393	1.0831	0.9617	0.0	0.0	-0.005	-14.17	49.5	1.126	1.052
292.	12	1.131	0.5298	1.0382	1.0853	0.9550	0.0	0.0	-0.003	-14.32	49.6	1.131	1.054
312.	13	1.134	0.5321	1.0358	1.0845	0.9531	0.0	0.0	-0.004	-14.43	49.7	1.134	1.055
332.	14	1.136	0.5329	1.0338	1.0831	0.9527	0.0	0.0	-0.004	-14.48	49.8	1.136	1.056
352.	15	1.036	0.4905	0.9602	0.9779	0.9278	0.0	0.0	0.123	-11.27	46.6	1.036	1.013
12.	16	1.000	0.4680	0.9734	0.9771	0.9467	0.0	0.0	0.141	-10.05	45.4	1.000	0.999
32.	17	0.977	0.4502	0.9769	0.9700	0.9732	0.0	0.0	0.158	-9.23	44.5	0.977	0.989
52.	18	0.961	0.4367	0.9797	0.9649	0.9996	0.0	0.0	0.170	-8.66	44.0	0.961	0.982

STATOR

FLOW SWIRL= 70.96DEG

PTAVG=139.41PSIA = 954318.PA

RVELAVG= 914.3FPS = 278.7MPS

PARTICLE SWIRL=143.64DEG

TTAVG=1140.0DEG R = 633.3DEG K

AXVELAVG= 671.8FPS =204.8MPS

PSAVG=120.85PSIA = 833212.PA

VELAVG= 716.3FPS =218.3MPS

U= 950.FPS = 259.MPS

THETA	SEG NO	VEL	MN	PS	PT	TT	WBL LBM/SEC	WBL KG/SEC	DF	INCIDENCE IN DEG	ALPHA IN DEG	AXIAL VEL	REL VEL
71.	1	0.950	0.4169	1.0026	0.9842	1.0259	0.0	0.0	0.409	-24.37	66.6	0.932	0.932
91.	2	0.943	0.4110	1.0021	0.9806	1.0375	0.0	0.0	0.422	-23.21	65.4	0.916	0.916
111.	3	0.931	0.4043	1.0031	0.9779	1.0451	0.0	0.0	0.441	-21.46	63.7	0.892	0.892
131.	4	0.913	0.3950	1.0060	0.9758	1.0523	0.0	0.0	0.474	-18.50	60.7	0.852	0.852
151.	5	0.875	0.3763	1.0114	0.9716	1.0615	0.0	0.0	0.579	-9.88	52.1	0.743	0.743
171.	6	0.926	0.3957	1.0058	0.9759	1.0788	0.0	0.0	0.463	-19.43	61.6	0.864	0.864
191.	7	0.971	0.4163	1.0029	0.9839	1.0765	0.0	0.0	0.391	-26.01	68.2	0.956	0.956
211.	8	1.041	0.4526	0.9989	1.0008	1.0504	0.0	0.0	0.322	-33.10	75.3	1.067	1.067
231.	9	1.082	0.4616	0.9979	1.0181	1.0052	0.0	0.0	0.291	-36.51	78.7	1.126	1.126
251.	10	1.096	0.4981	0.9965	1.0280	0.9650	0.0	0.0	0.282	-37.63	79.8	1.147	1.147
271.	11	1.098	0.5052	0.9957	1.0320	0.9423	0.0	0.0	0.280	-37.89	80.1	1.152	1.152
291.	12	1.097	0.5070	0.9978	1.0355	0.9338	0.0	0.0	0.281	-37.87	80.1	1.152	1.152
311.	13	1.098	0.5086	0.9954	1.0342	0.9307	0.0	0.0	0.290	-37.99	80.2	1.154	1.154
331.	14	1.099	0.5089	0.9941	1.0330	0.9299	0.0	0.0	0.280	-38.01	80.2	1.154	1.154
351.	15	0.986	0.4548	0.9936	0.9977	0.9300	0.0	0.0	0.360	-29.36	71.6	1.006	1.006
11.	16	0.975	0.4443	0.9972	0.9948	0.9507	0.0	0.0	0.376	-27.71	69.9	0.981	0.981
31.	17	0.964	0.4329	0.9989	0.9898	0.9784	0.0	0.0	0.390	-26.28	68.5	0.960	0.960
51.	18	0.957	0.4238	1.0003	0.9859	1.0058	0.0	0.0	0.400	-25.30	67.5	0.946	0.946

EXIT

FLOW SWIRL= 72.41DEG

PTAVG=135.07PSIA = 931264.PA

RVELAVG= 0.0FPS = 0.0MPS

PARTICLE SWIRL=145.08DEG

TTAVG=1140.0DEG R = 633.3DEG K

AXVELAVG= 0.0FPS = 0.0MPS

PSAVG=125.84PSIA = 867607.PA

VELAVG= 516.2FPS =157.3MPS

U= 850.FPS = 259.MPS

THETA	SEG NO	VEL	MN	PS	PT	TT	WBL LBM/SEC	WBL KG/SEC	DF	INCIDENCE IN DEG	ALPHA IN DEG	AXIAL VEL	REL VEL
72.	1	0.933	0.2923	1.0010	0.9884	1.0259	0.0	0.0	0.0	0.0	0.0	0.0	0.0
92.	2	0.917	0.2858	0.9995	0.9844	1.0375	0.0	0.0	0.0	0.0	0.0	0.0	0.0
112.	3	0.894	0.2775	0.9994	0.9811	1.0451	0.0	0.0	0.0	0.0	0.0	0.0	0.0
132.	4	0.855	0.2646	1.0002	0.9773	1.0523	0.0	0.0	0.0	0.0	0.0	0.0	0.0
152.	5	0.751	0.2310	0.9991	0.9653	1.0615	0.0	0.0	0.0	0.0	0.0	0.0	0.0
172.	6	0.868	0.2653	0.9998	0.9771	1.0788	0.0	0.0	0.0	0.0	0.0	0.0	0.0
192.	7	0.957	0.2931	1.0005	0.9881	1.0765	0.0	0.0	0.0	0.0	0.0	0.0	0.0
212.	8	1.066	0.3311	0.9994	1.0029	1.0504	0.0	0.0	0.0	0.0	0.0	0.0	0.0
232.	9	1.126	0.3577	0.9999	1.0160	1.0052	0.0	0.0	0.0	0.0	0.0	0.0	0.0
252.	10	1.146	0.3717	1.0001	1.0234	0.9650	0.0	0.0	0.0	0.0	0.0	0.0	0.0
272.	11	1.150	0.3775	1.0003	1.0266	0.9423	0.0	0.0	0.0	0.0	0.0	0.0	0.0
292.	12	1.150	0.3789	1.0029	1.0301	0.9338	0.0	0.0	0.0	0.0	0.0	0.0	0.0
312.	13	1.152	0.3803	1.0006	1.0285	0.9307	0.0	0.0	0.0	0.0	0.0	0.0	0.0
332.	14	1.152	0.3806	0.9993	1.0273	0.9299	0.0	0.0	0.0	0.0	0.0	0.0	0.0
352.	15	1.003	0.3302	0.9979	1.0014	0.9300	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12.	16	0.979	0.3186	1.0001	0.9985	0.9507	0.0	0.0	0.0	0.0	0.0	0.0	0.0
32.	17	0.958	0.3076	1.0000	0.9937	0.9784	0.0	0.0	0.0	0.0	0.0	0.0	0.0
52.	18	0.945	0.2992	0.9999	0.9901	1.0058	0.0	0.0	0.0	0.0	0.0	0.0	0.0